TOWARDS TERMINOLOGY RESEARCH AS A PRACTICAL PHILOSOPHY OF INFORMATION: THE TERMINOLOGY OF RADICAL CONSTRUCTIVISM AS A CASE IN POINT

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Abstract

The thesis presents a perspective on the possibility of harnessing sociocognitive terminology and related practices to the aim of describing philosophical terminology. In this case, the terminology of the radical constructivist philosopher Ernst von Glasersfeld is surveyed as a starting point. The experimental terminological records produced are re-incorporated into the theoretical basis constituted by the thesis. Therefore, its aim can be seen as twofold; the description of philosophical terminology also entails theory construction. The practice described can be seen as regenerative theory construction. It incorporates elements of formulation and of codification/ language engineering in terms of contemporary computational possibilities. In terms of its theoretical basis, the project extends not only to the terminology used in the corpus texts but also to concepts and terms needed to understand these in the first place. The outlook can be described as heuristic and experimental. The approach breaks down to the following sub-problems. Each can be seen as characteristic for terminology description in the human sciences:

1. The idea of conceptual entities and concept description needs to be adjusted to the field of experience. This starts from sociocognitive terminology and incorporates the anthropological view of concept analysis.

2. The conceptual entity of stereotype has to be accounted for, as the variance of the descriptions of immaterial objects suggests that they can only be apprehended in a radically simplified manner.

3. The application of prototype theory employed as by sociocognitive theory and the Aristotelian concept theory of (post-)classical terminology research needs to be adapted to the description of ideal types. This is compressed into the concept of scientificity.

4. The principles developed need to be compressed into the conventional categories of principle and approach. These categories need to be set in relation to both philosophical concepts and experience.

5. This design of a possible practice needs to be adapted to existing procedures. The existing procedures may be in need of clarification or redefinition against the background of their usage in non-standard contexts.

6. To facilitate this mutual adaptation, peculiarities of the context of philosophical terminography are explored and compressed under the concept of disciplinarity. To this, there is a declarative aspect and a procedural one.

7. The procedural approach to disciplinarity develops an understanding of the intentional aspect of agenda and interest. These orient the development of potential consensus about disciplinarity within the constraints of context and therefore the apparent identity of (sub-(sub-))cultures inside the context.

8. Following these observations, the overall theoretical and methodological construct is tested against exemplary cases.

To conclude, a practice for implementing these considerations is suggested. It includes the use of text fragments as units for textographic philosophical terminography and an understanding of computational information management practices appropriate to its principles.

Main introduction: Philosophical terminology as wicked problem

This study aims to address the basic question of what a theory and practice of terminology could or should look like if they are to be viable for the conduct of research in the field of philosophy. In order to understand the argument and structure of the present work, it is necessary to understand the underlying motivations and observations. This is the purpose of the present general introduction.

By way of consequence, this would also entail giving some consideration to the structure of the field in which the subject proper resides, the nebulous umbrella category of the humanities, or, as they are described in our terminology, the human sciences. Underlying this construction is a specific heuristic fiction set up to enable this endeavor and the procedures taken; this is however discussed further below.

Though this formulation may sound very general and ultimately simple, the problem is decidedly non-trivial since it had apparently been persistently ignored since the beginnings of terminology research (our preferred term); Wüster's (1985, 91, my translation) line that

> "Polysemy between authors runs riot especially in philosophy"
> (Ger. Die Sprachspaltung treibt besonders kräftige Blüten in der Philosophie)

seems, from my limited perspective, to be both the first and the last word from this department on the issue. This might be complemented with two more aphorisms from the founder of second-order cybernetics and/ or radical constructivism[1], Heinz von Förster (both in 2003); Förster stated in this regard that

> "The more profound the problem that is ignored, the greater are the chances for fame and success"

and

> "The hard sciences are successful because they deal with the soft problems; the soft sciences are struggling because they deal with the hard problems".

Against the background of this, we might assume that if the "soft sciences" deal with "hard problems", their specialized languages should reflect this experience, so that the preliminary work intended here may come down to a problem of formulation and – ultimately – to a problem of term formation, if one assumes, together with Larissa Alexeeva, that the term is fundamentally an expression that marks *the stop of a thought*.

From today's perspective, many of these problems could be seen as an extension of the phenomenon that has found entry into the discourses of "hard" and "soft" sciences alike under the umbrella of complexity.

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[1]What constructivism has to do with terminology will emerge in the following.

The most persistent form of complexity that this work ultimately deals with could perhaps be termed with the formation of *structural coupling*, or mutual co-evolution and inextricability of subject and object, since terminology research belongs *itself* to the spectrum of the human sciences and historically derived many of its central concepts and tenets from philosophy in the widest sense. Given that subject and object are inextricable, and that therefore the traditional distinction of object language and metalanguage can be seen to have collapsed at the outset, the only really meaningful question for this work of research can be the *question of formulation*, which has been asked in a different context by Jan Kooistra[2]:

> I pose the problem in the following way: How can we understand the situation in which we have at our disposal no terminology to understand the situation? This posing of the problem has several peculiarities; it is *abstract, circular* and does not refer immediately to any practice.
> Kooistra, 1988

Given that this poses a *wicked problem*, it stands to reason that a linear approach is precluded[3] as (as I found) one's best hope of tackling it would be in a holistic approach that includes an analysis and appropriation of a framework in which the problem can be understood, a basic experiential-operational description of its components, and the heuristic search for the (physical) means to tackle the problem essentially *at the same time*.

As the conventions of grammar entail that these must be presented in a linear order, some paradox arises, which is best characterized as a circularity: some commonsense or intuitive approach is initially taken for granted, connected to the most appropriate theoretical explanation in the respective context, and ultimately put in a perspective which accommodates every iteration.

This overarching perspective is then placed *before* the respective steps, which is why the observations to follow are *a posteriori* and need not appear in the text of the thesis, which served as the medium for deriving them[4]. The overall view is placed here, at the beginning, for the reader's benefit.

Roughly, the framework I have adopted for understanding the problem is radical constructivism – in the specific "dialect" of Ernst von Glasersfeld – which thus in some way constitutes the "object language" that changes places with the "subject language" once in a while.

This choice is motivated insofar as this particular branch is practically non-dualizing, or at least it can be interpreted in these terms, as has been a suggested by the late Ernst von Glasersfeld (2008): the distinction between object and subject is meaningless to it in the first place, as

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[2]Whose work (in Dutch) has also never appeared in English and knowledge of whose words I owe to an anonymous translator who had at some point briefly made available the abstract of Kooistra's theses on some remote corner of the world wide web.

[3]The very idea of *wicked problem* involves Förster's "hard problems" and Kooistra's "abstract circularity". However, the notion of "wicked problem" might be more readily understood because it places the problem in an everyday context of planning, which in an academic writing project would to some extent be reflected in structuring and delimitation: "The classical systems approach [...] is based on the assumption that a [...] project can be organized into distinct phases [...] For *wicked problems*, however, this type of scheme does not work, one cannot understand the problem without knowing about its context; one cannot meaningfully search for information without the orientation a solution concept, one cannot first understand, then solve" (Rittel and Weber, 1973, p. 162).

[4]For example, it could be argued that *interactive concept* analysis in Chapter 1, *worldview construction* in Chapter 4 and *phenomenology* in Chapter 7 are three different ways of conceiving of a linguistic formulation for similar processes of interpretation in three different contexts and from three different perspectives. However, that this should appear so can only be stated in retrospect, in the knowledge that an explicit process of interpretation is a *prerequisite* for discourse analysis/ paradigmatic analysis, codification and subject categorization, each of which requires a different angle and focus.

the object and the idea of subject are seen to primarily arise as a consequence of the subject's activity of distinguishing itself and the objects of its experience from what is termed "the flow of experience" (7.1.2.2). This is seen as interesting primarily from the process point of view (4), so that entities appear coincidental or contingent (6.1.2.1).

Secondly, the problem of formulation is elegantly addressed by way of operational definition, that is, the concept – of whatever theoretical shape or form – that is associated with a given expression form is seen to be derived from the *operations* necessary for its building[5], and not vicariously from the act of defining – which involves the use of other expression forms – or from "referents" seen as housed in some reality independent from the concrete experiencer.

Thirdly, the idea of circularity is addressed in a natural language exegesis of cybernetic principles like feedback or its reference to the appropriate texts, which harnesses the phenomenon of circularity to the solution rather than the problem in combination with the operational definition principle: by following lexical circularities up with the appropriate operations of definition and formulating them, problems of definition (and therefore concept description) are circumvented. This also entails the possibility of turning the formulated operations of terminology back onto themselves in order to foreground unreflected phenomena for further amplification and for projecting them outwards to the larger field by reflective abstraction[6].

This stated, constructivism is not seen as a closed conceptual system from which the entire approach can be derived, but as a component of a larger philosophy of information; its concepts can, to my mind, best be understood *in relation* to alternative explanations, and it is by no means devoid of its own internal contradictions and problems (see, e.g. the problem of *equilibrium*, on page 102). As the case may be, the identification of a framework that provides for some cogent explanations can itself be seen as a contribution to the formulative problem.

Heterarchical model of the formulation problem

Then there is the area of terminology research itself, which, due to a progressive opening-up to experience-based research programs (e.g. sociocognitive terminology and termontography, (1.4)) has lost its supposed hermetic closure but has thereby paradoxically become as multiform a subject-field as the object-field of philosophy itself.

Here, the constructivist approach to the solution of the *wicked problem* would seem to consist in stripping away the theoretical precepts provisionally and looking at (concept-oriented) practical terminography as a set of operations that can be performed by a particular individual; these operations would reside on the first level of the listing, but due to the structural coupling of subject and object, one would have to answer the questions at the next level, which would affect the *order* in which the respective tasks are to be performed. This can be seen to some extent as a formulation of the problem of formulation, although this particular breakdown is merely improvised to highlight the problem:

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[5]"The possibility of bringing such [conceptual] distinctions to awareness by examining the meaning of words, was the starting point that Silvio Ceccato's group chose for their conceptual analyses in the 1940s. But Ceccato had added a second question that led the enterprise beyond language and into the very domain of thought: 'what mental operations must be carried out to see the presented situation in the particular way one is seeing it'. This was the first serious application of the method the Nobel laureate Bridgman (1936) had called 'operational definition'." (Glasersfeld, 1995, p. 78)

[6]The reasoning here runs: if terminology research is a human science, and problem x is found in terminology research, then problem x might be characteristic of the larger context and therefore contribute to the development of a descriptive terminological theory of the human sciences.

1. Subject delimitation

   a) What is a subject field?

      i. depends on the answer to (1a), (1b), (1c), (2a), (2c)

   b) How is one field bounded against another?

      i. depends on the answer to (1d), (2a), (2c), (2d)

   c) Is a field socially or ontologically constituted, or simply accidental?

      i. depends on the answer to (1d), (2a), (2c)

   d) What is the relation between a field as concept, context, or descriptive label?

      i. depends on the answer to (2a), (2b), (3b), (3c), (3d)

2. Discourse analysis

   a) To what extent do discourses constitute subjects?

      i. depends on the answer to (1a), (1c)

   b) To what extent do discourses stipulate what counts as a concept?

      i. depends on the answer to (2c), (3a), (3c), (3d)

   c) How can terms be distinguished from non-terms in a particular discourse community?

      i. depends on the answer to question (1c), (1d), (3b)

   d) What understanding of discourse conventions is necessary for successful term selection?

      i. depends on the answer to (1c), (1d), (3b), (3c)

3. Concept analysis

   a) What is a practical conception of the concept of concept?

       i. depends on the answer to (1d), (2b)

  b) To what extent do ideas of concept theory exclude data from being understood?

       i. depends on the answer to (1c), (2a), (2b)

  c) Is a concept the representation of an experiential entity or a process, or both?

       i. depends on the answer to (1d), (2a), (2b)

  d) Should the idea of *concept* be admitted in the first place?

       i. depends on the answer to (2b)

4. Term selection

  a) depends on a solution to problem sphere (1) and (2), given that terms selected for description should be representative of the discourse of a specific field.

5. Term description (or codification)

  a) depends on a solution to problem sphere (3), given that the description of a term is the operational reverse of concept analysis, or "concept synthesis".

It should be clear that in this formulation, the problem is ***not tractable*** since there are too many mutually dependent variables that preclude the overall task being solved in a sequence 1-5; also, the circular formulation does not suggest a start- or an end-point.

A priori and a posteriori concepts and hypotheses

There is obviously the sub-problem of knowing which questions have to be answered before another can be tackled. Extrapolated to the question of which of the categories or concepts must be built up before others can be established, the dilemma resembles the problem that is known as *apriorism* in philosophy:

> *[A] priori* literally means "before something else". In general language, the expression is most often used when it is to be established that a course of action, a judgment or event is situated in time before something else that it is to be set in relation to. [...] With regard to the two fundamental aspects of representation, i.e. space and time, *a priori* should be taken to mean, as Kant explains, not in time, but in *concept formation* [p. 211 ... In this regard, PBN] One may well ask what must be assumed as fundamentally necessary from the start in a cognitive apparatus like human consciousness so that is able construct a world of experience like ours. An investigation into this would entail a careful analysis of the concepts that we use to divide, order, and sometimes influence our flow of experience.
> Glasersfeld, 1987, 211-215, my translation

Of course, a project of basic research in terminology cannot concern itself with questions that are as deep as that of how the forms of consciousness might emerge; yet in my interpretation, this idea suggests that an investigation into concepts, even specialized ones (which include those associated with the names of the fields themselves) must have come full cycle and be concluded before the necessary *a priori* concepts – here the "answers" to the questions listed above – can be hypothesized.

The hypothesis proper is therefore *a posteriori*, or "an explanation of the cause from the effects" (Schmidt and Gessmann, 2009, a posteriori, my translation).

The counter-intuitive consequence of this for the solving of my *wicked problem* lay in simply going ahead along the lines laid out above, operationally analyzing a few important concepts and the idea of *concept analysis* itself without concerning myself with any of the above questions too deeply, with the possible exception of those questions which had an immediate bearing on the conduct of the analysis (question (3) and, especially, (3b)). These problems could be formulated as another symmetrical pair of philosophical problems (see the idea of dichotomy, below) and would therefore give me the starting point for the present work. As it would turn out, the point to begin the analysis cannot be inferred from the notions of *a priori/ a posteriori* alone.

The twin scandals of induction and deduction

When one asks "to what extent do ideas of concept theory exclude data from being understood?", one is really asking the question of whether an unknown (because undocumented) area of terminology description should be approached *inductively*, by sifting through a variety of instances as they present themselves in experiential discourse, or deductively, e.g. starting from a specific semantic theory (3.3.2).

To answer this question, one would need to look into the long-term problems of both induction and deduction. Induction would give us no certainty whatever about the "lawfulness" or "truth" of the observation formulated, even if examples are being analyzed *ad infinitum*; this is what is known as the problem or scandal of induction (or the question "Why [...] is a single instance, in some cases, sufficient for a complete induction, while in others myriads of concurring instances, without a single exception known or presumed, go such a little way towards establishing an universal proposition?", J.S. Mill, cited in Vickers, 2006).

In constructivism, objective lawfulness or truth are not required (3.3.3); the scandal of induction therefore poses no hindrance to constructivist research *per se* (Glasersfeld, 1981). Hypotheses could be produced by reasoning upwards from observations, which presents a mode which is amenable to questions like most of the above.

Deduction, by contrast, *does* seem to limit what can be perceived – or at least what will be permitted. This is the much less well-known *scandal of deduction*, first established by Hintika; it entails that "deductive inference is usually regarded as being 'tautological' or 'analytical': the information conveyed by *the conclusion is contained in the information conveyed by the premises*", (Floridi and D'Agostino, 2009, p. 1).

Though it can be taken for granted that the scandal of deduction is one that belongs to the sphere of formal logic rather than that of natural language, we might infer that as a phenomenon, it is not exempt from the influence of natural language as formal languages can be seen to be constructed on its basis. These constructions might inherit a sufficient number of properties of

natural language to warrant our assumption (Glanville, 1982, p. 9; Bertalanffy, 1968b, p. 237; Sowa, 1999).

Here, a more significant problem rears its head: if the study only discovered what had been known from the beginning, it would – from my own personal point of view – not have been worth the effort that went towards conducting it.

Either of these are problems of pure philosophy, for everyday human reasoning arguably would not seem to proceed from the very bottom upwards nor from whatever *a priori* downwards. However, how could this inference be formulated so as to do justice to the specific operations in the practice of *concept analysis*? Here is the first opportunity to enter into the heuristic process. Naturally, other's observations and attempts to theorize (and therefore formulate) similar problems should not be ignored; however, the question as to what should be selected remains. The point here is to remain largely un-influenced by them unless they must be activated to explain a piece of data or phenomenon that has been turned up *inductively*.

This is a sub-problem of self-reference or structural coupling that can neither be addressed by analyzing the formulation problem nor by operational considerations on the mental level *per se*. Rather, it is a practical problem that hinges on the implementation of a mechanism for reference and comparison.

Here, the experiential unity of subject and object does not present itself as a challenge, but as an opportunity. Essentially, the idea is to handle the texts to be analyzed and the texts to be consulted by the same basic methods of information retrieval and corpus linguistics – a method which I had used earlier in my Master's dissertation (Neubauer, 2008) and elaborated further ever since then, but whose theorization unfortunately fell out of the thesis design on account of the strictures of the format; if anything, its traces survive only in the form of the residual case studies in the main body of the work.

Instead of including these considerations in appendices – which would lack the proper context – I would like to relegate their formulation to further work. The selection of texts, insofar as it must be justified on methodical grounds, has been briefly covered in the "further notes" section of the main conclusion.

Heuristic fictions

Here, the main basis for the inclusion of texts of our "situational archive" (Temmerman, 2000, p. 53) was the *heuristic fiction* that all texts of the human sciences – which hereby are extended to include any discipline relating to the study of the human rather the non-human world and therefore also the social sciences – are essentially treated as equally relevant and pertinent to the problem because these disciplines are constituted through discourse (2a) and fundamentally equivalent since their terminology and its expansion and maintenance constitutes basically all there is to them. I would term this the *holistic fiction*. Not without irony, I would consider this "totalizing metanarrative" the ideology of a dictatorship of reason whose territory extends exactly from one edge of my desk to other.

Of course this might be read as a strong ontological statement, and as one that needs to relativized, as many might – justifiably – take offense from it. What I have introduced here is, to use another neo-Kantian concept (Glasersfeld, 1995, p. 40), a so-called *heuristic fiction*; I do not believe the statement to be literally true and it does not need to be true in order to work or

produce results.

By way of further explanation, a *heuristic fiction* – which is often associated with the *Philosophy of as-if* of the neo-Kantian philosopher Hans Vaihinger (Glasersfeld, 2001a; Glasersfeld, 2003) – can be seen as different from a hypothesis or a even conjecture:

> Hans Vaihinger's monumental work *The Philosophy of 'As If'* [This is the title of the translated work, PBN] (1911) is regarded by many as the forerunner of constructivist thought. Vaihinger differentiates between hypotheses, which can be true or false, and fictions, about which we know that they are neither true nor false but which enable us to effect practical actions [...] According to Vaihinger, our fictions serve to construct our experiential reality.
> Schmidt, 1993, my translation

Our specific fiction is modeled on a particular assertion that can be found in one of the few extant works on a similar topic, de Beaugrande's considerations on "Terminology and Discourse between the humanities and social sciences":

> F. de Saussure's well known Cours de linguistique générale remarked over seventy years ago that 'other sciences work with objects that are given in advance', whereas in 'linguistics' 'it would seem that it is the viewpoint that creates the object' (1966[1916]: 8). Today, we might want to put the matter more radically: it is not so much the 'viewpoint' but the special-purpose discourse and its relation to the object domain that creates the science – any science, including linguistics, but also any branch of the humanities. This thesis, which points up the centrality of LSP and terminology research, is more disruptive, and to appreciate its force, we should continually and carefully reassess the role and function of special-purpose discourse and in particular of terminology, its the most prominent sector.
> Beaugrande, 1993, § 1.1

Being derived from a *heuristic fiction*, most if not all of the models and conclusions developed in this work have the status of *heuristic fictions* themselves – and idiosyncratic fictions at that, since they are mainly based on the heuristic and introspective phenomenological models of such thought processes as I have observed in myself. Their intersubjectivity is mainly granted by connecting them to established (i.e. conventional) terms, definitions and text fragments (also pioneered by Temmerman, 2000, pp. 42; 93). I have found the latter to be sufficiently important as a unit of observation that I would recommend their adoption as the unit for future work in this direction, should there be any.

Another fiction that serves to organize the present work could be called the *fiction of homonymy*. This assumes that terms that are homographs are – from the transdisciplinary perspective that the holistic fiction entails – to be assumed to have conventional meanings which can be combined into an overarching interpretation. This interpretation might however be one that needs to be explained and formulated itself.

This can be demonstrated on the example of another attempt to formulate the problem – or rather its iteration up to this point – so that it includes the exploitation of structural coupling phenomena in such a way that they are no longer to be viewed as a problem but as a methodological given that actually provides the key to the solution of the problem. This further provision will prepare the ground for the perhaps most radical and important idea underlying the present work and its design and execution – the idea of *regenerative theory construction*. In order to understand it, we now reformulate the design in terms of the interaction of complementary, structurally coupled objectives that reflect the relationship of subject and object and include practical

considerations. One way of attempting this is the following conceptual discussion, which will integrate and overlay the above *heuristic fictions.* It can be formulated thus:

This thesis has a twofold goal, with the twin aims feeding into each other:

1. Explore the potential of philosophical terminography as a means of theory construction by semi-automatic means;

2. Describe the experimental means and processes used towards this end formulatively, so that they become part of the methodology themselves.

The results of the inquiry are to be set down in the thesis document, which therefore becomes both an experimental result *and* its description. This can be justified as follows:

If the epistemic interest of *concept-oriented terminology research* is subsumed (after Riggs, 1982b) as:

$$\text{the study of } concept\ formation_{1/2} \text{ in a } subject_{1/2}$$

then it follows that the interpretation of this guiding principle depends on the interpretation of both subject (*concept formation*) and object (*subject*).

By *concept formation*, we can understand either the formation of individual cognitive structures, or learning (*concept formation$_1$*) or the formation of paradigms, schools of thought or disciplines (scientific sub-cultures and sub-sub-cultures) in collectives (*concept formation$_2$*).

By the same token, we can understand by *subject* the person (*subject$_1$*) or the subject specialism (*subject$_2$*). From these simple and arbitrary distinctions, four distinct interpretations of the principle follow:

1. *concept formation$_1$* in *subject$_1$*: Person acquiring (e.g. subject) knowledge.

2. *concept formation$_2$* in *subject$_2$*: Discipline forming or transforming or expiring.

3. *concept formation$_1$* in *subject$_2$*: Person hypothesizing collective cognitive processes.

4. *concept formation$_2$* in *subject$_1$*: Discipline studying individual learning processes.

The choice of interpretation translates into the orientation of the theorist. Under consideration of the *(now obsolete: human/ machine dichotomy)* dichotomy of instrumental reason and phenomenological understanding and the *structure/ agency problem*, interpretation (1) correlates with practical, heuristic concerns, perhaps with *(autodidactic) pedagogy* **and/ or** *personal knowledge management*; (2) with terminology as *philosophy of science* **and/ or** *scientometry*, (3) with terminology as *quantitative* **and/ or** *interpretative social science*, (4) with terminology as *cognitive science* **and/ or** *epistemology.* All of these interpretations remain under the provision that the *identifying criterion of terminology research is an interest in the pragmatic and cognitive function of the lexicon of a subject$_2$.*

Of course, many other interpretations are possible. The lexicon of terminology *itself* must be seen as embodying these aspects in its *composition*; it includes, among others, terms associated with cognitive or other *processes.* If the interpretation of the guiding principle is altered, then the lexicon must be modified and enlarged. ***The underlying question is, how can this done with the means provided by existing theories?***

The point that emerges from this is, as noted, the question which existing theories should be consulted at a point of specification that extends beyond the *holistic fiction.* Here, there would be a choice of a broad range of works of terminology research. We have placed our emphasis on the major theoretical and novel conceptions with a dialectal bent, such as sociocognitive terminology (R. Temmerman) and systemic terminology (G. Budin), as well as on cognitive terminology (L. Alexeeva), from which we take the important axiom of the definition of *term.*

Constructivist (post-)epistemology has already been introduced at some length. Central explanatory concepts are approached inductively, as noted. The general orientation of the study is towards the individual rather than the social group and to *process* rather than to *states* and *entities* – which follows by virtue of my experiential reality as its author.

Then there are two aims that have not been addressed – to the best of my knowledge – in any conception of terminology, perhaps because they fall outside of the scope of terminology research. However, they can be seen as integral for terminology research in the chosen subject field; in this regard, we also need to account for the programmatic aims of *worldview construction* after F. Heylighen and *augmented intelligence* after D. Engelbart.

Worldview construction is generic term that encompasses theory construction – which can be seen as function of it on a smaller and more specialized scale – while *augmented intelligence* expresses the idea that intellectual work can be employed to improve the tools that facilitate this work. In the final version of the thesis, the idea of *augmented intelligence* has also fallen victim to the shrinkage of the work, but can be seen to have been replaced with the idea of *discourse production.* Here, the idea of *regenerative theory construction* enters the picture in the form of *praxeology* as a generic formulation that makes no reference to a particular array of instruments.

Regenerative theory construction

Whether we speak of *augmented intelligence* – which, as it is understood here, involves meta-codification and the invention of computer-aided routines for linguistic knowledge work – or, more generically, of *discourse production* – which involves the codification of discourse in some medium, including spoken language – in relation to *praxeology,* Glasersfeld's above idea that consciousness involves a "slicing" and "ordering" of an amorphous "flow of experience" opens the possibility that the resulting "order" might be further abstracted and reflected on in *discourse production.* It is presumably this process which Budin has subsumed under the category of *epistemic writing* (2.5.5.1). It leads to the process of *concept analysis* being formulated in a structured artifact, which thereby solves our *wicked problem* under consideration for everything else that has been discussed up to now and the provision that we view the processes as cycles feeding into each other:

> [Th]e various types of structuring which are involved in the [...] system [involve] capabilit[ies] for doing each type of structuring [...] dependent upon the capability for doing one or more of [...] other types of structuring. [...] **This interdependence actually has a cyclic, regenerative nature** [...] *the capability for mental structuring is finally dependent, down the chain, upon the process structuring (human, artifact, composite) that enables symbol-structure manipulation [...] process structuring is dependent not only upon basic human and artifact process capabilities, but upon the ability of the human to learn how to execute processes [... and the ...] ability of the human to select, organize, and modify processes from his repertoire to*

> *structure a higher-order process that he can execute.* [... A] capability for structuring
> and executing processes is partially dependent upon the human's mental structuring,
> which in turn is partially dependent upon his process structuring (through concept
> and symbol structuring), which is partially dependent upon his mental structuring
> **[... A] significant improvement in symbol-structure manipulation through**
> **better process structuring (initially perhaps through [...] artifacts) should**
> **enable us to develop improvements in concept** and mental-structure ma-
> **nipulations that can in turn enable us to organize and execute symbol-**
> **manipulation processes of increased power.**
>   Engelbart, 1962

By way of an explanation: if Engelbart is saying that increased powers of "mental structuring"
(e.g. for keeping the components of a worldview coherent) lead to increased capabilities for
"symbol structuring" (i.e. discourse production), then it can be suggested that *worldview con-*
struction is an *a priori* of discourse production, and due to the nature of philosophical discourse,
perhaps more so in this area than elsewhere – this I assume. If *worldview construction* and
discourse production are not made explicit aims, they would nevertheless proceed *tacitly* in the
handling of discursive cognitive artifacts. To unquestioningly accept this would take away the
means for tackling the *wicked problem* as it presents itself. Therefore, any design of the study
should include *awareness of the interplay of these factors.*

Development

This brings us to the form and structure of the present work, which, as noted, must be explained
from its development over time. As most remained practically constant, we might present here
the following figure, which is based on one of the first outlines of the work:
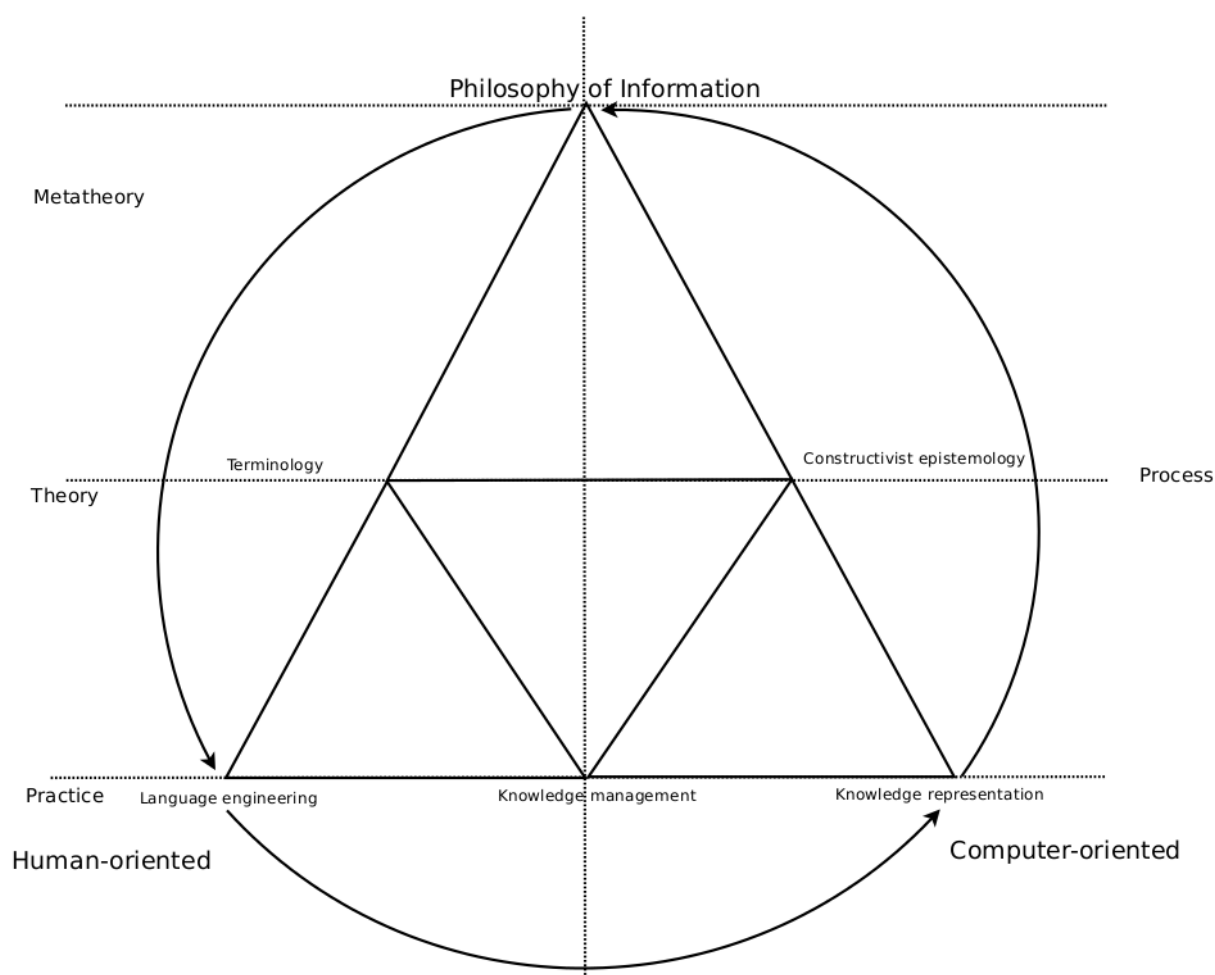
Figure 0.1: Design of the thesis.

The curved arrows represent the overall focus on (the now mostly) cognitive processes which bind the observations on terminology research and constructivist epistemology together by operations of relating ((1), (Main conclusion, pages 246 ff.)).

The horizontal dividing lines represents the traditional division made in terms of the continuum *abstract – concrete*, whereby the vertical dividing line represents the principle of *dichotomic construction* − another *heuristic fiction* – which (here still) runs between the actual *human – machine* continuum; this has for the present work been replaced by the idea of *agendas* (7) thought to function as *a priori* to the development of this continuum. The larger structure can be seen to represent *paradigmatic* – and largely tacit – *worldview construction*, whereby the inner (inverted) triangle stands for the actual *discourse production* that was to result in the present document.

Dialectic and dichotomy

The division of most essential categories into dichotomic pairs is primarily a *heuristic fiction* that serves to organize and set into relation some idealized aspects of the phenomena under observation. Again, it is assumed that *dichotomies* are not factually true or false, whatever this may mean. *Dichotomies* as such are a common principle in philosophical classification[7]

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[7]They may be reflected to some extent in the *disjunction* principle of terminological *Begriffslogik*, e.g. Wüster, 1985, p. 12.

(Dahlberg, 1974, p. 34). This is also an observation echoed by Myking (2007, p. 77), who noted that *dichotomies* are constructs that need not display internal symmetry:

> The concept of "dichotomy" belongs to philosophy and theology rather than to lexical semantics, which does not use "dichotomy" as a precise analytical category. As dichotomies are instances of the general principle of binarism [or from Latin, dualism, PBN], a plausible assumption would be that they share properties with other forms of lexical opposites, whether termed contrast, antagonism, antithesis, antonymy, dyad, binarity, opposition, counterparts, or polarity. Opposites are a heterogeneous class, as discussed by, amongst others, Cruse (1987).

Here, it is noted that *dichotomies* can be expressed in a variety of lexical phenomena, which points to the organizing *cognitive function of polarity*, or rather *bi-polarity*. A special case of this can be seen in dualism in general, which seems to be an important *heuristic* (6.1.2.1) people use in concept formation; an explanation for it has been formulated in the context of *personal construct psychology*, which is a form of psychological epistemology that in some applications overlaps radical constructivism and seems also to be compatible with the evolutionary cognitive science that underlies the concepts of *heuristics* and *biases*:

> ***Constructivism's answer to all of these dualisms may be to underscore that people construe dichotomously.*** In other words, Kelly's (1955/1991a, 1955/1991b) view of constructs as ***bipolar dimensions*** of meaning that people use as lenses through which they filter experience of their surroundings suggests that ***dualistic thinking may be an unavoidable aspect of human knowledge construction***. In terms of evolution, if the ability of human beings to dichotomously construe their circumstances came about through natural selection, then dualism is something bound to remain with us for some time to come. *One potential solution is to entertain the "as if" construction that human brains have evolved to organize experience according to perceived opposites.* If so, all human construing is fundamentally dualistic, and the dualisms human beings have eternally struggled with are merely those that have been selectively retained rather than discarded - ostensibly because they work reasonably well in many instances, ***despite the problems they produce when applied outside their range of convenience***.
> Raskin, 2008, p. 15

Of course, assigning one half of a dichotomic category to a phenomenon is only a provisional step to orientation and not the function of concept formation proper: "By inventing dimensions of meaning that account for events, people organize psychological experience. Further, they continually test their personal constructs by tracking how well they predict life circumstances and by revising them when they are judged deficient" (Raskin, 2002). This testing, if it takes place on the *paradigmatic* level (the first of our dichotomies, (1)) is not dissimilar to the philosophical *dialectic*, a largely tacit principle too widespread to be tracked (although a representative model can be found in Beaugrande, 1997b, ch. 3, § 5).

Examples for dichotomic construction and dialectical thought in key works of terminology research are, for example, the dialectic of order and chaos in knowledge organization and the dialectic of univocity and polysemy in scientific discourse.

Budin: dialectic of order and chaos

In Budin's work, examples for the principle can be seen in the proposition of a balance between order and chaos in general, certainty and uncertainty, vagueness and definiteness in physical

and biological systems (1996, p. 8), order in the sense of logical definition versus "lexical and conceptual muddle" (ibid, p. 11) and with regard to the dualism of particle and wave in physical indeterminacy (ibid, 26). It can also be perceived in the proposition of a dialectical function of the concept of organization:

> Instead of an unbridgeable gap between order and chaos, we can, as should have been demonstrated, *reconcile the apparent opposition* between order and chaos using an extended, flexible concept of organization, which will bring them into *a relation of mutual complementarity.*
> ibid, p. 64, my translation

Here, the dialectic is seen – on balance – on the *paradigmatic* level of *organizing principles*. A *syntagmatic* application, or rather interpretation of empirical data is a feature of sociocognitive terminology.

Temmerman: univocity and polysemy

The idea that polysemy and univocity are countervailing forces that strife for balance recurs repeatedly in Rita Temmerman's work (2000, pp. xiv, 126, 156). This statement should be representative of the argument:

> We argue that two *counterbalancing forces* are at work when categorisation takes place within a language community: on the one hand the urge for *univocity*, on the other hand the urge for *diversification* when attempting a better and broader understanding.
> ibid, xiv

This also underscores her understanding of the purpose of sociocognitive terminology, which thus turns its attention to and mobilizes its descriptive inventory for the formulation of the traditionally under-emphasized phenomena of polysemy.

Philosophical terminography as dialectic between personal knowledge and ignorance

My personal *worldview construction-* and *discourse production*-oriented conception of *philosophical terminography* – which can be seen as an aspect of *philosophy of terminology* (Alexeeva, 2003) by dialectic inversion – embraces the cognitive interest previously formulated as *"concept formation$_1$ in subject$_1$"* in attacking the *wicked problem* posed in the heterarchical model of the "formulation problem" and has – insofar as an overarching dialectical outlook which transcends the teleological fictions of e.g. *scientificity* and *disciplinarity* can be ascribed to it – perhaps the purpose of exemplifying, rather than formulating, the *dialectic* between *personal knowledge* and *ignorance*. The latter can be seen as the *perturbation* (see definition/ discussion of *perturbation* on page 99) that sets in motion the construction of the former.

In this sense, I take it for granted that *knowledge* is understood as relating to viable problem solving, and *ignorance* as relating to the ignorance of the boundaries of agendas and fields – which are themselves reflective abstractions – with regard to their awareness of and interest in the particular dimensions of some problem.

Another, more practically meaningful *dialectic* would relate – again in formulative terms – to the question of which phenomena are best thought of as *entities* or *processes* (3c). Here, we find questions of *qualities* and *entities*, while our approach is more concerned with *processes* of

understanding, which nevertheless lead to the *distinction of entities*. This primarily affects – negatively, I admit – our core model of *thick concept,* which is seen as a unity of *entity concepts* described in various forms (*logical, prototype, stereotype*) and *process concepts* (*schemes*). The latter practically dictate another feature of the work, i.e. the personal heuristic orientation, which has already been noted. This orientation should also be seen against the large *quantity of viewpoints* that must be processed through the dichotomic scales and the dialectical way of thinking, whereby either of which obviously only admits two at a time.

Reflexivity and reflective abstraction

Related to both the process of *reflective abstraction* (4) and the concept of *viability* as well as to the empirical testing of the constructions posited and to the overarching dialectic principle is the notion of *reflexivity* (in conventional spelling; I would prefer *reflectivity* or simply *reflection*) which appears to be a function of the *structural coupling* phenomenon:

> *[I]t seems that the closer one's topic is to one's method, the more important it becomes to devise some way of coming to terms with the implications of that similarity.* In this argument, writing about writing has to be a self-consciously circular process and its practitioners must learn to live with the (rhetorical) consequences – *such as my own initial negative reaction.*
> Ashmore, Myers, and Potter (1995, p. 339)

It must be accepted that an idea like *reflexivity* can probably not be defined in a satisfactory manner. In the present work, the "implications of similarity" are perhaps most noticeable in the final chapter, where the entire system of heuristics and the praxeology are put to an empirical test in the analysis of a meta-discourse or a specific debate involving two texts and the analysis of *sentiment* and rational content in two fragments surrounding a technical and/ or rhetoremic homonym.

Here, I became aware of the bias emerging from my own writing, which prompted me to formulate the overall conclusion in the hope of introducing counter-stereotypical devices into the *praxeology*, besides finding a place for *philosophical terminography* as a special case in the codification framework of textography.

Overview of the chapters and their function

As already stated, most of the points discussed here are not features of the chapters themselves, but only emerge as a meta-narrative in retrospect, or *a posteri*. As the development of ideas in the thesis is cumulative as well as non-linear, it is perhaps best to outline the overall thematic progression of the thesis in terms of a meta-narrative. This way, we also address what might be called "Budin's dilemma", i.e. the problem that the overall structure is difficult to explain where "everything is connected to everything else" (Budin, 1996b, p. 25); specific topics and concepts, by contrast, can be gleaned from the table of contents (i.e. the macrostructure) and are presented in less detail.

Chapter 1

Chapter one will shed light on the larger philosophical and linguistic environs of concept theory and *concept analysis*, given the interdisciplinary nature of terminology research. *Concept* is defined by its underlying metaphor of gathering phenomena mentally, a generic level at which the discussion is left at the initial stage. In addition, we introduce the idea of *thick concept*s, which have *declarative* and *procedural content* and therefore bind together entity and process concepts, with the latter being somewhat neglected in terminology studies but prominent in radical constructivism, and vice versa. Consideration is also given to the concept of *culture*, which underlies most of the later refinements in terms of the phenomenological description of subject contexts, *conventions* and the emerging terminological conventions to which the design of the *praxeology* of *philosophical terminography* must be fitted. So considered, this chapter provides the minimal groundwork for a holistic concept analysis; the conceptual seed of the unfolding argument is planted by connecting philosophical *concept analysis* and discourse analysis in the idea of *interactive concept analysis*, which from then on will undergo constant development. The aim here is to take a dialectical reading of the traditional dichotomies of terminology research.

Chapter 2

Chapter two, on the other hand, adds another type of entity concept to the "gathering" conception, which is seen as an addition to the logical *genus et differentia* and *prototype* conceptions that have already found reception. We make a case for the study of *stereotype* concepts, which have a *heuristic* function in the human sciences because they help simplify multiplex experience and therefore provide orientation in an environment of extreme variance. We build our considerations on a specific case, which turns the methods back on our discipline for the first time. In the process, the method of *interactive concept analysis* is enhanced and concretized by *componential analysis*. *Componential analysis* itself is found to contain a *syntagmatic* and *paradigmatic* aspect. The inclusion of *stereotype* concepts also has the additional function of augmenting concept analysis with regard to the detection of cultural connotations (which is later termed *qualitative sentiment analysis*). This chapter of the thesis prepares the ground for later meta-reflection – which follows from the *bipolar* (procedural/ declarative) nature of *thick concepts* – and progressively refines the method through meta-reflection (later termed *phenomenology*). Here, the first "regenerative" scheme is introduced: (*paradigmatic*) *concept analysis* is employed to *synthesize* a concept of *stereotype* for terminological description. This discussion however remains on the "entity" and/ or declarative level. A possible taxonomy of *stereotype* constructs and their signifiers is constructed; it is to be later incorporated into the culture/ sub-culture/ sub-sub-culture schematic of *disciplinarity*. Therefore the foundations for the model of *disciplinarity* are established. The role of *stereotypes* in communication and their correlation to *acceptability* and *appropriateness* is considered. Given that *acceptability* and *appropriateness* can – at a minimum – be seen as functions of types of knowledge relating to *conventions* (regardless of whether these are seen as explicit and ideal-typical or implicit and cultural), the distinction of *scientificity* and *disciplinarity* can be seen as grounded in the insight of this chapter.

Chapter 3

This distinction is then developed in Chapter three, which begins at the explicit, ideal-typical and therefore "theory-laden" *meta-scheme* of *scientificity* of which a model is to be built. Here, we start from lexical considerations regarding the noun *science*. *Scientificity* is, therefore, the derivative property that makes an activity *scientific* (as in the adjective) and captures the relevant ideal-typical *conventions* that may play a role in the perception of "the *scientific*". Here, the method of *interactive concept analysis* is developed further by making reflective – rather than perfunctory – use of instruments like the semantic network WordNet. Thus, the problem of definition is approached from an operational point of view. The phenomenon of *circularity* is encountered for the first time, and *interactive concept analysis* is modified with an operational defining strategy, which provides the modeling perspective for the *procedural* content of *thick concepts*. The emphasis of the discussion and therefore the focus of *attention* shifts to *philosophy of science*, still under the self-referential conception of terminology research as a philosophy of science. In this context, the commensurability of terminology research and constructivism can for the first time be underwritten experimentally and argumentatively. *Stereotype* theory can be brought to bear to a limited extent. However, the *prototypes* of *scientificity* can be recognized in the philosophical *theories of truth*. Here, different attempts of *worldview construction* can be seen to part ways in terms of *representationism, naturalism, foundationalism* and *coherentism*. This provides a categorization instrumentarium that can be applied to both theories of terminology and epistemologies. The case of *naturalism* also supplies the observations on *import* and *inter-domain borrowing* which are later to be developed into an adjusted sign-model for *philosophical terminography* on the basis of the extended semiotic triangle. The case of *foundationalism* provides the scenario on which our conception of *experiential complexity* is based, and the case of *coherentism* represents a reflection of the *regenerative principle* as well an application of *interactive concept analysis* which brings out the parallel between philosophical and linguistic understandings of *coherence*. A terminological description of the first constructivist term (*viability*) is conducted. From there, the focus of attention turns to the *procedural* aspect of *scientificity*, which signals that now the threshold for situating *interactive concept analysis* in the larger context of *philosophical terminography* has been reached. By and large, the discussion of the (relatively simpler) construct of *scientificity* serves as a requirements analysis for the outline of *philosophical terminography* in Chapter four.

Chapter 4

Here, we use the insights to begin the *regenerative theory construction* proper. We begin by inductively constructing a definition of the central constructivist concept of *scheme*, which also turns into the designation for the *procedural* content to be inscribed into the model of *thick concept*. The theory construction enterprise itself is framed in terms of the conventional vertical dichotomy and dialectic of theory and practice, and the horizontal spectrum of *theory, principle, approach and procedure*. The holistic construct is connected to the idea of *praxeology*, or a theory of action. In terms of *a priori/ a posteriori*, it is assumed that the *praxeology* must be formulated before a model of the internally complex *thick concept* of *disciplinarity* can be attempted. This is justified by an outline of the function that such a concept should posses in terms of *scheme* theory. In terms of *heuristic fictions*, a system/ model distinction is imported from (second-order)

cybernetics, which can be interpreted as the dividing line between a fiction and a hypothesis. A further import concerns two "laws" of organization for metaphorical use. The principles of *philosophical terminography* are elaborated in terms of the system/ model distinction: it is asserted that any definition of a philosophical concept that a terminographer might produce is essentially a hypothesis about the empirical knowledge they have themselves built up (*"maker's knowledge"*). Empirical knowledge here is taken to result from *interactive concept analysis*, which can now be seen as program of actions of interpretation that yields unique and private concepts for every interpreter. For this reason, *indeterminacy* can be assumed to be – in principle – generalized. Interpretation, in turn, is to be understood as the insertion of a conventional meaning – formulated as a defining statement or abbreviated by a term – into a context. This can also be assumed for the reverse, or the insertion of a statement of context into the place of a conventional meaning. *Text-world model* and *discourse-world model* are assumed to be *schemes* associated with the action of interpretation. Given that *schemes* can bring forth *higher-order schemes* (or *meta-schemes*), it is argued that the construct of *disciplinarity* would contain the *meta-scheme* in control of the *discourse-world model* (and also *social stereotypes*, partly related to the experience of sub-cultural specialization), while the construct of *scientificity* could be seen as containing the *meta-scheme* in control of particular *text-world models* (each containing an *ideal type* or *prototype*). Both are modeled as subordinate to the functions of *worldview* that coincide with the sub-fields of philosophy dedicated to their study. Alongside this constructed dichotomy, *approaches* are understood either as attempts to "train" the *meta-schemes* by way of *worldview construction* – which coincides with the *paradigmatic* level of observation – or as the specific sets of *schemes* by which discourse production (active) or information construction (*knowledge-making* through interpretation, also active) are controlled. Adjusted for the outlook of the study, *worldview construction* can be assumed to take place on the personal level. It is not required to be transparent. Given that the context of *terminography* forms the background of *discourse production*, this is seen mainly as a codification activity – and one that takes place in a context rather than in a vacuum. It is seen to involve the manipulation of text fragments inherited from others. With a top-down (deductive) model that distinguishes *philosophical terminography* from philosophical *worldview construction*, the chapter ends and transitions to the bottom-up perspective of *procedures* in *philosophical terminography*.

Chapter 5

Here, the bottom-up (*inductive*) treatment of the subject matter mainly serves to distinguish *philosophical terminography* from existing conceptions of both terminography and lexicography. Chapter five has the purpose of incorporating – by way of *assimilation/ accommodation* – the most promising functions and techniques of either. Here, differences with regard to defining practices in generic terminography become apparent; the textuality of, e.g., encyclopedic definitions comes to the fore, an insight that results from the exercise of *regenerative theory construction*, which mobilizes the concept of *scientificity* and the experience of defining *scheme* for explanation. Subject-specific factors that have co-evolved with *codification* and *meta-codification* practices are also given consideration, especially with regard to *philosophical lexicography* and *sociological terminography*. The later turns out to provide a particularly productive analogy. It provides the basis for designating units like *retronym*, *explication* and *neosemanticism* which enrich the formulative language of *philosophical terminography* and lead to a model of entity concepts together

with their signs that can be synthesized with the model of process concepts developed under the auspices of *principle* (i.e. the discussion of the concept of *scheme*). Practical procedures, like the use of thesauri, are also tested in an experiment which again relates back to the description of *scheme*. Reversing this course of action, descriptions are also inductively built up for the *umbrella categories* of *knowledge engineering* and *language engineering*, whereby terminographic *praxeology* is again turned on its own theoretical basis. Here, the first indication of the problem of *topicality* and *agenda* (in subject delimitation) and the problem of the "implicit term" that needs to be inserted into the context in interpretation (rather than the other way around) appears. With regard to the former, the idea of the *simulation* of the human intellect within the classical paradigm of artificial intelligence (the principle underlying the *procedures* of knowledge engineering) is *inverted* to express the simulating capacities of the human mind. The term *simulation* is then inserted into the context of radical constructivism. This is found to also fill a gap in the *function* of the construct of *disciplinarity*, i.e. the *simulation of contexts*. Here, the *heuristics* of goal-directedness and stable regularities are outlined. Artifacts like *semantic networks* are understood as instruments of the *sociological imagination* which serve humans to induce "conventional meanings" rather than as precursors of "intelligent" machines. This insight is also extrapolated in an interactive analysis of *language engineering*, whereby the definition of the field label is found to entail its composition in terms of sub-fields or its membership in a larger classification. However, *language engineering* in operational terms is understood as *codification* technique that can be seen as a part of all the *procedures* under consideration. As such, it brings together the different means used in *philosophical terminography* when seen as discourse production. This task is in this case that of producing written discourse which is not itself exempt from the quality of artificiality. This is seen to align with the synthetic view of *worldview construction* or *maker's knowledge* that is later set in relation to the agenda of *instrumental reason*. This is one of the agendas that are assumed to express themselves in the stereotypical *codification mentalities*. Another blank in the function of the *discourse-world model* is filled by the anthropological perspective on the – loosely organized – semantic fields whose formulation can foreground an *agenda*. The *text-world model* gains its operational counterpart in the *semantic network*. This complements the idea of regenerative theory construction by assigning means to ends. The text dictionary is finally suggested as a possible medium for the discourse production of *philosophical terminography*.

Chapter 6

As the anthropological idea of *semantic field* appears to be a very protean conception, we return to the elaboration of the *declarative* aspects of the *thick concept* of *disciplinarity* in Chapter six. Given that the *simulation* that the *meta-scheme* enables is practically required to perform subject delimitation, it follows that the capability entails the simplification of a very complex socio-historical world of contingent relations. The workings of the hypothesis are here put to the test with regard to their function in the task of subject delimitation. This begins with a recounting of such aspects of *disciplinarity* that have already been built up tacitly, by way of *worldview construction*. In a larger context, the idea of "lenses" that serve the orientation in the "flow of experience" crops up here in conjunction with the interpretation that *scientificity* and *disciplinarity* can be used as special purposes "lenses" for *philosophical terminography*. The idea of *complexity* is discussed, unmoored from its ontological context of *semantic systems*, and

translated into the microscopic perspective of *philosophical terminography*. The starting point for the understanding of two *declarative* facets of *experiential complexity* is here constituted by its analogy to the two classical *a priori* categories, space and time. In terms of the perceived complexity of *experiential time*, the quantitative aspect of a large amount of interactions with people and objects is considered against the context of *stratification*, which implies that the objects with which one interacts may have had prior (formative) mutual interactions that must be *simulated*. The imputed results of these interactions are subsumed under the category of *contingency*. As an example for *contingency*, the terminological phenomenon of *self-centeredness* is used. *Stereotyping* is seen as one possible way of simplifying this *simulation*, in conjunction with other *heuristics* and their *biases*. Microscopic complexity in *experiential space* (which can be metaphorical), on the other hand, is seen as a feature of organization which is expressed in boundaries and hierarchies which provide the *heuristics* for its simplification. As their use is however limited to particular observers, an intersubjective interpretation along such lines is seen as *biased*. This is explained by a geological analogy. The textual/ terminological interpretation here is that the *strata* of texts can be seen as "folded" or "broken" – which is exemplified perhaps in the present work – and that *retronyms* in particular may be interpreted as "belonging" to different strata simultaneously. The function of either model is demonstrated in relation to subject delimitation, one task which is ascribed to the *meta-scheme* of *disciplinarity*. The discussion begins with the question of whether subjects can be delimited *a priori*. Here, the topical appearance of subject fields (related to *contingency*) is outlined and related to the dichotomy of *categorization/ classification*. This is demonstrated on the example of cases. These include the human sciences as a category and terminology research as a *topos*. The temporal aspect (or *stratification*) is induced by contrasting experiential *a posteriori* delimitation with attempts to arrive at a timeless classification of subject fields in *philosophical classification*. These latter are seen as a function of socio-historical *stratification* itself. In this context, examples are prepared for cases of non-linear *stratification*, which make reference to the phenomena of *convergence, prematurity* and *regression* of specialist disciplines vis-a-vis philosophy – which can also affect the *diachrony* of terms. It emerges that *contingency* and *stratification* cannot be seen in isolation. Also, the natural language/ culture asymmetry entailed by either begins to emerge.

Chapter 7

Chapter seven serves to elaborate the *procedural* content of the model of *disciplinarity* in analogy to that of *scientificity*. By contrast to the latter, the *process* component here is related to *agenda* (or goals) rather than to methodological procedures. By realizing this, the induction of *contingent conventions* is prepared and facilitated. *Agendas* are related to the goals that disciplines or schools of thought might want to archive; they seem to parallel the *cognitive interests* of individuals. Furthermore, the idea of *culture* is downscaled and therefore adapted to the three modeling levels of *philosophical terminography*, which represent an "ordered stratification" of the models of *scientificity* and *disciplinarity*. These modeling levels represent the lines of culture (*worldview*), sub-culture (*meta-scheme/ thick concept*) and sub-sub-culture (*scheme*). They are derived in analogy to natural language from the weak version of the Whorfian hypothesis: it is assumed that the special language of an interest group will emerge something akin to "cultural categories". As *agendas* are partly *axiological* concerns, the principle of *observer autonomy* is fixed to counter impressions of determinism. Then an operational, inter-linguistic analysis is performed to induce

the concept of *cognitive interest*, which can itself carry connotations with regard to a cultural background in the holistic or *gestalt* sense. The *ideal types* of a "scientific"/ *nomothetic* and a "humanistic"/ *idiographic agenda* are induced via *paradigmatic analysis*, or thought experiment. These can be seen as unities of methods, language, and larger social – and therefore broadly axiological – concerns. Following the symmetry principle imported from the sociology of science – which can be seen as a form dialectic or bipolar construction –, critical pressure is exerted on both *ideal-* and/ or *stereotypes*. Their circular relationship of mutual dependence is asserted. With regard to the *agenda* of *instrumental reason*, ethical implications are brought out. With regard to the *agenda* of *self-serving phenomenology*, an indeterminacy in terms of objective and the necessity of elaborating particular threads of development is emphasized. With regard to the tradition of *geisteswissenschaften,* this affirms the complementarity of *agendas*. It is found that such complementarity is also intrinsic to *philosophical terminography*. Differences in *agenda* are linked to polarizing discourse and terminological *connotation*. Then the terms *instrumental reason* and *phenomenology* are adopted and discussed in relation to *agenda*, a discussion which relates back to the components of *philosophical terminography* discussed in Chapter five. It highlights the reflective function of *becoming aware of agendas*. The *instrumental agenda* is found to be so pervasive that in its wake, the influence of certain structural metaphors is – to its own detriment – effaced. Against this, the conception of *phenomenology* as the practice of the distinction of objects in the "flow of experience" and of their assignment to units is presented from a constructivist perspective. The insights of the discussion are incorporated into a revised working definition of *culture*, which completes the construction of *scientificity* and *disciplinarity* as theoretical lenses associated with *philosophical terminography*. This concludes the regeneratively constructed theoretical construct *per se*.

Chapter 8

Chapter eight is the final chapter of the work and also its factual conclusion. With a final specification of the role of *qualitative sentiment analysis*, the theoretical construct is subjected to a test in terms of the three modeling levels fixed in the preceding Chapter seven. For this purpose, two "classical" conjectures are revisited in terms of their applicability for subject delimitation. These are J. Galtung's "intellectual style" conjecture and C.P. Snow's "two cultures" conjecture, perspectively. The first is mainly evaluated with regard to its use of *stereotypes*, its construction of *contingencies* and its evaluative dimensions, which are mapped to the *procedural* and *declarative* aspects of the models of *scientificity* and *disciplinarity*. The findings with regard to this intuitive conjecture are then discussed with regard to their wider impact and further development. These are then compared to a qualitative survey on the priorities and activities in contexts of terminology research as they are distinguished by geographic area. For the case study, the categories of the conjecture and those of the survey are brought into alignment. As generalizations on the level of *worldview* cannot be operationalized, this is to be seen as an addendum to the discussion in Chapter two. By contrast, an interpretation of the reception of the "two cultures" conjecture is found to be operationalizable with regard to *prototypical* textures that can be seen as the signature of *gestalts* of *agenda* and *codification mentalities* in *topic-independent* subcultures. In this regard, the interpretation does not address the vexatious question of "two cultures" in terms of actual "natural" and "human sciences" but the *agendas* of sub-cultures – which display a fractal boundary to sub-sub-cultures – within the latter. There seem to be specific disciplines –

including philosophy – in the human sciences context which do not display set preferences. This finding arguably favors a *meta-scheme* approach over the adaption of certain existing models. Here, the relationship of *term formation* practices and *definition strategies* as part of textual forms which are characteristic of formulative *agendas* comes into focus. This is an area in which *conventions* and therefore *stereotypes* are found to play a role. Here, two *prototypical codification mentalities* can be seen to rely on the *paradigmatic* continuum of *expository-argumentative* and/ or *narrative* text types – whereby the "scientific" *codification mentality* seems to have developed a *taboo* on the devices of *narration, metaphor* and the first-person perspective and therefore precludes *narrative* text types. On the other hand, it appears as relatively permissive in terms of *neology*. The "humanistic" *codification mentality,* by contrast, appears as characterized by a relative preference for "conventional" language and as less motivated by a belief in artificial intervention in terms of *neology*. It however seems to exhibit a larger tolerance towards *narrative textures*. It is found that the *codification mentalities* influence how well terminologists can recognize and represent special purpose lexis, given that their *expectations* may be *stereotypical* and biased towards the *ideal type* of the "scientific" *codification mentality*. Two more case studies are conducted, one with regard to the entire texture of two texts forming "halves" of a larger debate conducted in the context of German-language literary studies over the course of two years. Here, the synthetic method of *philosophical terminology* is applied descriptively to the conflict of *codification mentalities* and ideology that emerges from the case example. The second case is an application of the praxeology to the in-depth analysis of smaller coherent *text fragments*. It leads to the observation that in concrete applications, the *meta-schemes* can be brought to overlap in the overall conceptual construction process and that the *praxeology* of *philosophical terminography* therefore can be seen to work as expected – which is however an effect that must be seen as dependent on the narrow range of its application.

Micro-, meso-, and macrostructure of the thesis

The document has, as can be expected, a *macrostructure* (the organization in chapters) and a *microstructure* (the organization of each chapter into sections, subsections etc.). Here – as may have been noted in the above summary – each level has its own internal logic and organizing principle. The *macrostructure* follows the principle of *a priori/ a posteriori*, or the necessity for one step of *concept analysis* or *synthesis* to be completed before another is begun. That this is not a linear order, i.e. that *disciplinarity* is not discussed after *scientificity* but only after the conceptual means for this have been made available by formulation follows from the principle of *experiential holism* briefly explained in Chapter (1). In the last resort, this is an effect of the constructivist approach to knowledge as "*maker's knowledge*".

The *microstructure* of each chapter, on the other hand, follows the principle of *topicality*, which does imply that each *topic* includes the following one. As noted in the discussion of topicality in Chapter (6), this does not necessarily reflect an order as it would be imagined in classical logic.

The last and perhaps most interesting feature of the present work may be seen in the *mesostructure* of the thesis. This is in essence a network of hyperlinks which connects *topics* that are conceptually close, but remote from each other in textual space. This principle is what allows the empirical conclusion to the largely metatheoretical work in the first place. It is best taken advantage of by using an electronic version of the document, as the functionality may be lost or

impaired on paper.

1 Rethinking concept analysis

Introduction

When writing about or reviewing different conceptions of theoretical terminology, the main pitfall appears to be that one attempt to compare the proverbial apples and oranges; far from a uniform field, the study of terminology or *terminology research* can be seen as an autonomous field (Cabré, 1996; Laurén and Picht, 2006) ultimately differentiated by differing *agendas* in a larger social context and *cognitive interests* at the level of the person:

> Terminology is somewhat like the anecdotal elephant that gave rise to different tactile impressions. [...] ***translators, interpreters, indexers, language planners, subject specialists, standardizers of nuts and bolts and rail gauges, localizers, ontologists, artificial intelligence experts, discourse analysts, and so on***, all have their tactile impressions of this elephant, and [...] these impressions are all legitimate
>
> Antia et al. 2005, my emphasis

It is from this multitude of perspectives that both the formulation problem with its connecting points to deeper philosophical problems and the need to analyze basic operations from the ground up arises. This has already been stated in the Main introduction.

As noted, we leave the construction of perspective to the later chapters of the work and begin with entering into the problem sphere of *concept analysis* by practicing it reflectively; for this purpose, we well first reflect on the concept of "concept" and then select a functional inventory of concepts – both conventional and "novel", relative to the context of *terminology research* – which can be seen as indispensable for advancing the analysis and discussion.

1.1 Indeterminacy of concept

Before we provide working definitions for some concepts that need to clarified before the section on methodology that will introduce a modified understanding of operational concepts, we like to note that the *concept of concept* itself will be left undefined on purpose throughout this chapter. Here – and also in the following chapters – *concept* should best be tentatively understood as any sort of hypothetical model of mental constructs or abstractions.

The purpose of leaving the category of *concept* thus open and indeterminate is partly in the avoidance of any ontological (i.e. metaphysical) commitment, which, as making a strong statement about something that is beyond experience, would contradict the post-epistemology of radical constructivism introduced as part of the methodological inventory that holds that an experiencer-independent reality (including a fixed organization of mental constructs valid for everyone) cannot be known (e.g. Glasersfeld 1981 *et passim;* similar criticism of strong concept theories has, from a (specialized) linguistic perspective, also been advanced by Kretzenbacher

(1998, my translation) who stated that "for [LSP] linguistics, the pre-linguistic concept is a black box; it can only make statements about linguistic phenomena"; the motivation here is however somewhat different and will be discussed later on in more detail), and partly for heuristic purposes, which serve the operational definition of the *concept of concept* by gathering together (which interestingly happens to be the Latin origin of the English term *concept*: "The original meaning of the Latin term *conceptus* was 'a collecting, gathering or conceiving. The modern-day equivalent encapsulates these sentiments", Grix 2001, glossary) elements of any concept theory encountered (of *concepts* as *categories*, *thick concepts*, definitions of *genus et differentiae* etc.) for a flexible, practical *process view of concept analysis* well-equipped for dealing with variety of *atypical* cases.

1.1.1 Working definitions

Nevertheless, the approach we are trying to develop calls for a number of fundamental concepts to be at least tentatively defined, since they are operational in the text of this chapter. Observations on the central ones (*culture*, *thick concept*, *syntagmaticity*, *paradigmaticity*) point to *category* structure, which has to be described using blended encyclopedic and semantic (approximately: logical) information:

> Encyclopaedic information and semantic information cannot always be clearly distinguished. Understanding does not usually happen via essential characteristics and relationships, but via 'nodes of knowledge', which can have varying levels of complexity, depending on how detailed the understanding is or needs to be in a specific situation.
> Temmerman 2000, p. 36

This is the *category* conception of *concept* that we "gather" by adding its central characteristics into the understanding of *concept* and modifying it further. The following five *concepts* all display *category* structure to some extent, but the *concept* of *thick concept* will to some extent go beyond this structure by adding norms and values (or, in general terms, rather processes and goals) to enlarge the understanding of *concept* further.

In terms of the actual and potential sources of conceptual information, we regard both specialized texts and works of reference (when used as sources) as *syntagmatic* discourse (Beaugrande, 1997c; this will be explained gradually). The definitions are provisional as the implicit assumption is that their objects cannot be fully and exhaustively delimited.

1.1.1.1 Culture

By *culture*, we provisionally understand *paradigmatically* the "schemes [Ger. *"Muster"*] and models of the interpretation of reality" (Koller, cited in Zybatow 2002) in the context of the "modes of behavior, institutions, ideologies, and myths that compose [their] frames of reference and whose totality, whether it is coherent or not, distinguishes one society from another" (Certeau, 1998, pp. 103/104) and *syntagmatically* "a system of communication, conceived according to models developed in theories of verbal language" (ibid.). This is on balance an anthropological definition of *culture* (as "a group's dominant and learned sets of habits", House 2008) which should be in keeping with the idea of *thick concept* in use here.

1.1.1.2 Thick concept and thick description

By *thick concept*, we understand a mental construct – as stated, independent of any specific concept theory – which not only contains semantic and encyclopedic information (like a category) but also culture-bound ways of doing things (potential processes) and goals to be achieved or sought. These latter could be seen as norms and values. Given that any conceptual construct can be considered an *element of knowledge*, we could apply the conventional taxonomy of knowledge[1] to the idea of *thick concept* and state that the content of a *thick concept* has, at a minimum, a *declarative* and a *procedural* facet.

The *concept* of *thick concept* has its origin in cultural anthropology, and is therefore consistent with above anthropological definition of *culture*. Otherwise, it is circumscribed in a way that is suggestive of *category* structure:

> Williams (1985) mentions the following characteristics of thick concepts. They form a *unity of fact and norm*, but the large character is found in the descriptive part (129). Thick concepts are *action-guiding*, they are not decisive for the action, but play a part there (140). *There are concepts you can not use either as a man or if you are not local* (143-145). Thick concepts *occur less in modern societies* (163). *Ethical life is based on the use of thick concepts* (200).
> Levering 2002, my emphasis

The *category thick concept* is derived from the idea of *thick description* in cultural anthropology (ibid.), which can be understood thus:

> What makes an ethnographic description 'thick' rather than 'thin' is the layering of interpretation of all sorts: ethnographer's interpretations, informant's interpretations, people's own interpretations.
> Barnard and Spencer 1996b, glossary, 933

A *thick concept* activates the *paradigmatic* frame of reference which is related to institutions, myths and behaviors of *culture* as well as the *syntagmatic* frame of natural language theories about *culture* and cultural constructs. Vis-a-vis the blending of encyclopedic and semantic information in the conception of *category*, the *category* of *thick concept* adds the procedural or process-oriented facet to the "container" of concept by emphasizing the process-shaping aspects of actions and goals. *Thick description*, on the other hand, gives a concretization of the action of gathering conceptual elements, whereby we approach the question of *what* is being "layered".

1.1.1.3 Syntagmaticity and paradigmaticity

Paradigmaticity and *syntagmaticity* (more conventionally termed *paradigmatics* and *syntagmatics*, Hartmann and James 1998) are, strictly speaking, general (logical) concepts from lexicography (ibid.), (structuralist) linguistics, semantics and semiotics (Bussmann, 1996; Crystal, 2008) that acquire a "thick" consistency through the layering of these disciplinary perspectives[2].

Since the adjectives *syntagmatic* and *paradigmatic* are, however, used frequently throughout this chapter, we develop their operative meaning or function here from Alain Rey's interpretation, which we consider most central to the use of these concepts in terminology research:

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[1]after Wilss (2011): declarative knowledge, or "knowing what", procedural knowledge, or "knowing how", and pragmatic knowledge, or "knowing for whom or what".

[2]This is strictly speaking an aspect of the *action of interpretation* and therefore subject of Chapter (4). What a disciplinary perspective might be thought to consist of will emerge later on. The more immediate methodological implications are addressed under (1.3).

> The observable reality of discourse provides syntagmatic relations. These are directly observable, whereas the paradigmatic axis is the result of an artificial construction, of which alphabetic dictionaries are well-known examples. In this case it is recommended to speak of 'lexicon', lexical field, lexical sub-groups (systems) and to leave the word 'vocabulary' for those units which are observable in discourse [...] These two realities correspond to two visions of the same object which are conceived as more or less intuitive images or rigorous models, since paradigmatic groups are constructs made by lexicographic craftsmen or linguistic scientists on the basis of observable data, i.e. syntagmatic groups, statements, texts, etc.
> Rey 1995, pp. 27/28

The implications of this are twofold; for one, our use of *syntagmatic* corresponds to *empirical* in our usage, and the use of *paradigmatic* to *conceptual*, where it belongs to the overall *syntagmatic* plane of written text or *discourse* received and interpreted.

Strict *paradigmaticity*, on the other hand, resides on the level of individual, embodied thought and experience (especially if the experiencing subject is a "lexicographic craftsman" or terminographer). This leads to the question of the role of experience that Levering (cited in 1.2.4.2) regarded as central for the analysis of *thick concepts*, and its relation to the concept pair *paradigmaticity/ syntagmaticity*. While inconspicuous on the surface, a serious treatment of the question would call for some introspective and pragmatic questioning of the basic inventory of conceptual tools available to terminologists in the context of subject-driven research, as will be seen.

1.1.2 Experiential holism

If we regard *paradigmatic* constructs (dictionaries, glossaries) as *syntagmatic discourse* (or a "communicative event among participants", Beaugrande 1997c), the use of these terms becomes somewhat paradoxical and potentially inconsistent.

From a cognitive or philosophical perspective, this may be attributed to the *mind-body problem*, since the *paradigmatic* (potential) *concept* proper can be construed as in the recipient's head, while the *paradigmatic-syntagmatic* construction of others is recorded in the separate artifact of a work of reference[3]:

> In late-twentieth-century philosophy of mind, discussions of the mind-body problem revolve around the twin poles of the problem of psychophysical causation and the problem of consciousness. And while it is possible to see these as independent problems, there is nonetheless a link between them, which can be expressed as a dilemma: if the mental is not physical, then how can we make sense of its causal interaction with the physical? But if it is physical, how can we make sense of the phenomena of consciousness?
> Crane 1999, p. 548

Considered strictly in this frame of reference, the "dilemma of concept analysis" that will emerge in the following is as function of both the *mind-body problem* and the *structure and agency problem*. In terms of a heuristic, this might be mitigated by considering that *paradigmatic* (internal, cognitive) interpretations of signifieds and signifiers in syntagmatic texts (material artifacts apart

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[3]As it stands, this dichotomy could be seen as among the prototypical *wicked problems* of the human sciences; another could be seen in the so-called *structure and agency problem*, the "puzzle of whether it is the social context in which individuals act that determines their action, or whether it is the individuals or 'actors' themselves who form and shape the social context and institutions around them" (Grix, 2001, glossary). While either of these would appear irresolvable, they seem to affect a wide range of problems in the area (including terminology) so that some form of "workaround" must be identified.

from their presentation in consciousness) are under the influence of text interpretations conducted earlier in "the flow of experience", a term which suggests that experience is perceived holistically, or as *gestalt* (i.e. in terms of "*entire* domains of experience", Temmerman 2000, 70, my emphasis or, more explicitly, as a "structure, configuration or pattern of [...] phenomena so integrated as to constitute a functional unit with properties not derivable from its parts in summation" (Heylighen and Vranckx, 2002, gestalt), which underlies the impression of the *entirety* of a domain). This *gestalt* provides the opportunity for individuals to isolate some *syntagmatic* items at the expense of others; the *paradigmatic* internal configuration of *concepts* is then suggested to be modified on the basis of this selection, and vice versa:

> The receiver of a piece of language, be it a word, a sentence, or a text, faces a task of interpretation. As members of a linguistic community, users of the language have formed, in the course of experience, semantic connections between the experiential items that constitute language and other items that they have isolated in the *flow of experience*. [...] Insofar as the receiver succeeds in *completing* the conceptual structure, he or she will consider that the piece of language has been understood. *Interpreting a communication, therefore, is the* **process** *of weaving a conceptual web such that it satisfies the constraints that are indicated by the received signs or signals. Neither signs, signals, or words can supply the conceptual material to build that web, but they do delimit what is eligible.*
> Glasersfeld, 1981, my emphasis

Interpretations arrived at this way are hence thought to form the *paradigmatic* "conceptual web" *internal* to the observer, experiencer, or text recipient. The function of this web is not to capture "positive" *paradigmatic* content but rather to constrain the interpretation of other *syntagmatic* items so that they fit the interpretation of the overall mental image. The emphasis is in any case on the internal "world", which implies that not *all* that is available for input *has* to be interpreted. Pivotal to the process is the perceived relation of newly formed interpretations to other interpretations constructed before and after[4].

So, we practically avoid the *mind-body problem* (which is unlikely to be resolved in this chapter or thesis) by interpreting as *paradigmatic* whatever is not expressed in the text in explicit terms and a by *syntagmatic* definition and what is therefore to be reconstructed by activating the subjective conceptual network. By contrast, we regard as *syntagmatic* whatever is present in explicit terms and in the form of definitions and what thus *limits* this subjective interpretation. How this process of interaction is to be understood or even modeled in methodological terms will be treated in the later chapters of the thesis, from Chapter (4) onwards.

1.1.3 Subjectivity

As stated, our interest is in the *process* of generating and activating this subjective, cognitive network by interacting with texts as experiential objects. The process of constructing descriptions of *concepts* on the basis of *syntagmatic* discourse samples and relating them to *paradigmatic* frames of *culture* (whereby *culture* can be segmented and multifaceted, i.e. language community, specialized community or deeper layered segments, as will be seen later) can be considered *interactive concept analysis* starting from empirical *concept analysis* (Levering, 2002).

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[4]This could be seen as another interpretation of "the central insight of structuralism", i.e. "that meaning is not inherent in signs, nor in what they refer to, but results purely from the relationship between them", Temmerman, 2000, p. 55. However – as can be seen in the fragment – the emphasis *here* is not on the *entity* of *meaning*, but the *process* of its creation.

Since the interaction is between our own embodied conceptual system and *syntagmatic* discourse artifacts, we need to account for the subjectivity of our descriptions. This introduces some measure of circularity. Note that these descriptions are *about* a *culture*, but simultaneously the product *of* a *culture*. In the sense of the latter, they can only be made with reference to a particular *culture*, so the chapter (and larger thesis) will seek to activate particular frames of reference in order to generate *thick descriptions*; the starting point here is the "folkloristic" conjecture of a "research culture" of "posititivism" and "interpretivism", respectively.

As such, the attempt is heuristic in its outlook, since the main communality between *paradigmatic* research philosophy or culture and the *syntagmatic* specifications to be developed (*agendas* and *codification mentalities*, among others; (6),(7),(8)) is that they can be seen as *categories* or *thick concepts*, which on the face of it is not a very informative statement, except that the former are commonly associated with methodological choices and the latter are ascribed to cultural preferences for one type insight over another, which motivates the choice of method (compare the *structure and agency problem*, above). That a relatively coequal treatment is given to these constructs must ultimately be justified from view of *culture* stated above.

In terms of the working definition of *culture*, the interpreter (or concept analyst, philosophical terminographer, (4)), is – for better or worse – embedded in a *gestalt-like* continuum *between* the system of communications (based on natural language) and the acquired and/or institutionalized social habits of belief which are formulated by others using this system of communications. He or she must themselves use the system of communications to form(ulate) their own interpretation of the social belief habits they are embedded in (François, 1997).

This appears to be part and parcel of the *wicked problem* of formulation presented in the Main introduction, and calls for the development of a "vocabulary" for the phenomena encountered; as noted, however, such a vocabulary need not be invented from scratch.

One could say that attempts of coming to grips with this situation – however tentative they may be – are the very essence of philosophical or cognitive systems theories. These theories also face the problem of formulation, whereby it must be noted that authors on the subject have embraced different strategies for dealing with it. Some, like e.g. Glasersfeld (1981) use poetic metaphors, like for example the metaphor of the "flow of experience"; in this vein, we could also consider the (borrowed) metaphor of the "dialogue of the dead" used by François (1997) with regard to the conventional limits of language. Others, like e.g. Humberto Maturana apparently use a plain scientific style and register that however makes use of linguistic circularity or self-reference as an element of style to underscore their experience of circularity. This example may exemplify the latter point:

> *We* modern natural scientists *accept* a given *proposition* as a scientific *explanation* of a particular *situation* of our *praxis of living* as *observers* (or phenomenon to be explained), *only if* it *describes a mechanism* that produces that *situation* or *phenomenon* as a *consequence of its operation* as one of four *operational conditions* that the *observer* can conjointly *satisfy* in his or her *praxis of living*.
> Maturana, 1988, my emphasis

The sentence eventually loops back onto its own subject; the subject and its object are modified in the passage or elsewhere in the text. Here, *syntagmatic* style is used as a means to express the *paradigmatic* idea of circularity, but this is perhaps an inessential digression in this place. Its meaning may have become clear at the end of the present work.

Starting at the beginning, *concept analysis* would seem to be the method of choice for elaborating such observations. As can be suggested, it is not exempt from natural language as a system of communication and social habit as a frame of reference, which leads to the inherent dilemma of a ascribing *empirical* and *conceptual* nature to *concept analysis* as a method; a practical methodology needs to capable of dynamically accommodating both aspects. Here, we need to look once more for a point of entry.

As noted, it appears expedient to begin with a *syntagmatic*, i.e. empirical analysis into which *paradigmatic* organizers or objects for comparison (e.g. dictionary definitions or complementary *defining contexts* (2.3.4.1)) as recalled and recorded from earlier experience are introduced as needed. This will run as a methodological thread through the entire discussion. Where a shift from *paradigmatic* to *syntagmatic* perspective is necessary, it will indicated accordingly. This can be seen as a very simple form of *thick description* which needs to be developed and itself described before it can be applied.

1.1.4 Interactive concept analysis

In the following Chapter (2), we will use the term *terminology science*, a derivative coinage from German which some authors have used to label *terminology research* as a specialized field and which has a well documented history of controversy to exemplify concept analysis. This will be broken down into components and the denotations and connotations of the lexical components as well as those of the whole construction will be analyzed from alternating *syntagmatic* and *paradigmatic* viewpoints with view to evaluative statements. There, we will discover further "blanks" in *concept analysis* to be experimentally filled in, as it involves actual anthropological *thick concepts* anchored in natural language communities as well as an interlinguistic aspect.

For now, we will stay with the coarser construct of "research philosophy", which can seemingly be treated without reference to such intricacies.

The insights of the analysis of the *paradigmatic* construct *research philosophy* can, in principle, be set up as a *prototype* case and linked to presumed tendencies and/ or explanatory preferences of language-bound intellectual cultures. As the larger culture in which the communities operate practically only constitutes one factor among many, its significance must perspective-wise be downscaled; at a minimum, it must be broken down to allow for many forms of disciplinary or intellectual *subcultures*.

First, however, we will attempt to set the scene for this by establishing a background in the more conventional parallel debate that contrasts presumably opposing *research philosophies* in the social sciences. We begin by examining one example from *management information systems,* a discipline which is in some respects similar to terminology research.

1.2 Opposition of positivism and interpretivism

There, the debate between "positivists" and "interpretivists" has been of long standing and can now be seen as "folklore" in research circles (Weber, 2004). From the perspective of our working definition of culture, it could be considered as belonging to the category of *myth*. Differences between *data-centric* (as "pure" *syntagmatic*) and *meaning-centric* (as "pure" *paradigmatic*) approaches and the rhetoric that the debates are couched in (ibid.) are based on *open questions* ((4.1.1); this is a category to which, e.g. the *mind-body problem* can be said to belong). In other

words, they are unlikely to subside anytime soon; the debates appear to have become especially entrenched in the social sciences (Grix, 2001, p. 27), perhaps as a result of the infamous "science wars" that took place around the turn of the century[5] (see e.g. Shapin 2008).

As an initial step, it would be interesting to establish whether the debate has had any practical bearing on the method of *terminology research* per se and whether it is represented in any recognizable form.

1.2.1 Positivism and interpretivism distinguished by method

It is normally acknowledged that any meaningful research activity in a social context involves a component of both *observation* (e.g. of the experiential phenomena of *culture*, above) and *explanation* (e.g. the construction of an interpretation of such phenomena by means of the *syntagmatic* system of communication; compare Williams and Chesterman, 2002, p. 58), even though their precise configuration may vary considerably between individuals and disciplines.

Weber (2004) – in his case offering an account of management information systems – notes with respect to the oppositional or dichotomizing construction of positivist and interpretivist research philosophies that:

> [T]he differences lie more in the *choice of research methods* rather than any substantive differences at a *metatheoretical level*. In this regard, researchers who are labeled as positivists tend to use certain kinds of research methods in their work – experiments, surveys, and field studies. Interpretivists, on the other hand, tend to use other kinds of research methods in their work – case studies, ethnographic studies, phenomenographic studies, and ethnomethodological studies. [...] *I believe a more-productive and more-interesting discourse [...] would relate to trying to understand better why different researchers choose different research methods.* I suspect a *variety of factors* are at play – for example, the *types of training provided to researchers, social pressures* associated with *advisers* and *colleagues*, and preferences for obtaining certain types of insights during the conduct of research.

For the following discussion, it should be borne in mind that it is especially the last question that is of interest here. It shall be tackled in an idiosyncratic and perhaps deliberately provocative way in order to open up a different perspective on the problem. As stated in the introduction of the present chapter, it is however necessary to come to terms with the phenomenon of self-reference for this purpose, which makes this a non-trivial task.

In contrast to terminology research, information management systems has a "catalog" of methods that come with labels such as *positivist* or *interpretivist* attached, which, if the view is upheld, makes their distinction (and reconciliation) considerably easier than it would be if one were dealing with aspects of a (in a general sense) unified method with *contradictory aspects and facets*. In the following, these aspects are to be formulated.

1.2.2 Concept analysis as method

A direct extrapolation from sociology or applied information systems to terminology research is therefore likely to founder if we take a statement like the following as a starting point for analyzing analogical methodological debates:

---

[5]Here, we are however already on the trail of a sub-problem in *philosophical terminography*, the interpretation of *contingencies* necessary for obtaining orientation to the context proper (6).

> Research in terminology serves both *theoretical* and *practical goals*. The *methodology is basically one of detailed conceptual analysis*, but it also involves *bibliographical fieldwork* and *corpus processing*. [...] In the area of theory, cognitive and philosophical questions come to mind
>
> Williams and Chesterman 2002, 22, my emphasis

Here, the unity of theoretical and practical goals would appear to justify our initial considerations on the *gestalt* aspect of experience. Note the connecting clause *"but it also involves"* – it suggests that corpus and documentation work do yield quantifiable results which need, however, not be indicative of "truth" in isolation[6]. They can rather be thought to supplement *concept analysis* – which is a classical "interpretation[7] task" – with a grounding in data. Consequently, the *positivist/ interpretivist* dichotomy would need to be reframed as a conflict between *conceptual* and *empirical* research:

> Many scholars in the *philosophy of science* make a distinction between conceptual (sometimes also called: theoretical) and empirical research (see e.g. Gile 1998: 70). The distinction goes back to the *traditional debate* between between *hermeneutics* and *positivism*: *hermeneutics* (*the science of interpretation* [!; PBN]) has often been thought of as the basic research method of the *humanistic disciplines (philosophy,* literary theory, aesthetics ...) whereas *positivist methods* based on empirical *observation* and *experiment* have characterized the *hard sciences*. At its simplest, the distinction is between a focus more on *ideas* and a focus more on *data.*
>
> *Conceptual research aims to define and clarify concepts*, to *interpret* or reinterpret *ideas*, to *relate concepts* into larger systems, to introduce new concepts or metaphors or frameworks that allow a better understanding of the object of research.
>
> *Empirical research*, on the other hand, seeks new data, new information *derived* from the *observation* of *data* and from experimental work; it seeks evidence which supports or disconfirms hypotheses, or *generates new ones.*
>
> Williams and Chesterman 2002, p. 58

Reducing the problem to a dichotomy between the human and the natural sciences[8] does not offer an escape from the dichotomy. Without further elaboration, it would merely imply substituting one broad dichotomy for another. Therefore, we shall dispense with it for the time being and approach the problem gradually.

In order to speculate on the underlying social and institutional pressures or the *paradigmatic* and *procedural* precepts associated with the *culture* that shape preferences like the above – and to develop explanations from *syntagmatic* discourse samples – it is more promising to emphasize the aspect of conflicting *traditions*, whereby *tradition* can be considered a form of long-term social pressure.

Apparently, we are dealing with an issue that has been around long enough to shape the (*connotative*) *syntagmatic* use of terms which students (and therefore future academics writers) pick up while in training in the particular context of their institutions. This context is itself part of a *culture*. The differences in outlook therefore seem to be *inherited* from the existing literatures –

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[6]At least not in the sense that would satisfy a hypothetical, stereotypical positivist as they are framed in Weber's debate. As to why that is, see especially Sinclair, cited in (6.3).

[7]Here, our understanding of interpretation is similar to that expressed in Glasersfeld 1981; compare Levering 2002 for the application of *concept analysis* as an *ethnographic* method in the context of the conventional understanding of interpretative methods.

[8]Compare (8.2.1) and the still influential C.P. Snow; since this belongs to complex of *disciplinarity*, it is more appropriately treated in the respective chapters.

or systems of communication, on a *syntagmatic* level – which in turn encode *paradigmatic* traditions and behaviors. On an experiential level, their unity constitutes the institutions themselves. Discourse production and terminology use – as seen from a *diachronic* perspective – should therefore provide material for a *concept analysis* in the case of investigating the "folkloristic" debate as well as for more advanced cases to follow.

1.2.3 Ambiguity of concept analysis

This indirect approach makes sense due to the nature of terminology research stated above[9], which is in itself not uncontroversial; Kageura (2002, p. 23), for example, thinks that *concept analysis* and concept theory collapse into lexical semantics and that they are not the central question of terminology research in any case. We will methodologically accommodate this view under the heading of *semasiology* and *onomasiology*.

In terminology research, the distinction between what would constitute a broadly *positivist/ empiricist* on the one or an *interpretative/ conceptual approach* on the other hand cannot be tied to the methods directly. The categorization of research philosophies here is a more complex issue than it would at first glance appear[10]; since the object under investigation is always a sign and its signified (or "associative response", Crystal, 2008, pp. 348/349). Therefore, it can be explained why terminology research is invested in the notion of *concept analysis* and its ramifications. However, what are these? *Concept analysis* is an essential method and component of (speculative or metaphysical) philosophy in general, a field which is technically (that is, in terms of *scope*) superordinate to any specific personal or collective research philosophy or even "specialized philosophies" – such as the *philosophy of science* – when they are construed as "second-order problems" (Vidal, 2007).

1.2.3.1 Paradigmatic or philosophical concept analysis

In this context, c*oncept analysis* can denote *paradigmatic analysis* – both in a linguistic and philosophical sense of *paradigmaticity* as relating to the "constructs made [...] on the basis of observable data", Rey, 1995, 28, above – with regard to the analysis of definitions:

> Paradigmatic conceptual analyses offer *definitions* of *concepts* that are to be tested against potential counterexamples that are identified via thought experiments. Conceptual analysis is supposed to be a *distinctively a priori* activity that many take to be the *essence of philosophy*. To the extent that paradigmatic conceptual analyses are available and successful, this will convey support for the classical theory [classical/ Aristotelian concept theory]. Conversely, *if the definitions aren't there to be discovered, this would seem to put in jeopardy a venerable view of what philosophy is and how philosophical investigations ought to proceed.*
>
> Margolis and Laurence, 2011

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[9]This is again a heuristic fiction, and has deliberately been set up as such. Williams and Chesterman 2002 is a general manual providing orientation for translation studies researchers and possibly not intended to provide a detailed map of the terminology landscape. Some subbranches or *cognitive interests* will of course display more or less of an interest in qualitative concept analysis than others, e.g. terminometry (less) or cognitive terminology (more); this is however best conceptualized as an aspect of *agenda* (7) and/ or *scientificity* (3) and can be organized with a different vocabulary, depending on the context.

[10]Otherwise, the present discussion would hardly be necessary. I believe that a rather self-contradictory picture would emerge from an inflexible mapping of "positivism" and "interpretivism" onto theories of terminology, and that deeper insight may be obtained by questioning these stereotypes themselves, as Weber (2004) suggested for his discipline. This however requires an insight into or a vocabulary to formulate stereotypicality: (2).

In general, terms like *concept analysis* or *paradigmatic analysis* may appear almost tautological if one assumes that a concept, at its simplest, is (any type of) a mental *construct* (as stated above) and that *analysis* is taken to mean "the well-known study of concepts and their interrelations" (Broad, cited in Vidal, 2007; it is also noteworthy that the philosophical dictionary Lacey, 1996 considers *analysis* as synonymous with philosophy).

Formulated in full, this tautology implies a form of circular reasoning: concepts depend on the analysis of other concepts and further analyses will produce further analyzable concepts – regardless of whether these are derived from the *observation of data* or *speculative thought experiments* – which may even *modify* the original analysis if one considers the self-reference of cultural phenomena briefly outlined. This circularity is the second, and perhaps more poignant aspect of the dilemma of *concept analysis*.

1.2.3.2 Syntagmatic or discourse analysis

Furthermore, the definitions of concepts must be *formulated in a language* if they are to be available at all, especially if one supposes that they are "there to be discovered", as the above fragment stated. In a strictly *syntagmatic* sense they are, if one is willing to undertake the *empirical* effort of locating and extracting the data. *Paradigmatic analysis*, if taken seriously, implies the interaction with *syntagmatic* or *discourse analysis* as a prerogative:

> Such a 'discourse analysis' might help to reorient a 'philosophy of science' or 'history of ideas' that underestimates the role of discourse in the access to knowledge and imagines that epistemological constructs like 'theories' or 'paradigms' are free-standing entities apart from the main texts that present them.
> Beaugrande, 1994, § 47

The link between *paradigmatic analysis* – which can be taken to mean *concept analysis* as the analysis of ideas – and *syntagmatic* analysis or *discourse analysis* – which can be taken as the empirical analysis of language – can thus be established and both can be construed as a *practically* inextricable bipolar construction:

> These *two realities correspond to two visions of the same object* which are conceived as more or less intuitive images or rigorous models, since paradigmatic groups are constructs made by lexicographic craftsmen or linguistic scientists on the basis of observable data, i.e. syntagmatic groups, statements, texts, etc.
> Rey 1995, 28, above

A possible interpretation of this dictum is that the *analysis* of language and the analysis of *concepts* are inextricably linked, while an empirical and a conceptual "reality" may still be *distinguished* without difficulty. This may be so because the *paradigmatic concept* is implicit in a specific bit of language (but may be explicit somewhere else) while the *syntagmatic concept* (by which we should understand the "definition" as a *gathering of linguistic items*) is explicit in the bit of language, at least in a particular observer's interpretation when it is put under scrutiny (see (1.1.3)).

It follows that a discussion of the philosophical implications of *concept analysis* – with view to whether they support a *positivist/ empirical* or *interpretivist/ conceptual* position – may be carried on (and perhaps is being carried on) *indefinitely* without reaching a satisfactory conclusion. Practically any rational argument as to whether the use of the method of *concept*

analysis is a hallmark of the one or the other approach may be advanced in the process of such a debate on the strength of the above or any similar argument. The concept of *concept analysis* is therefore indeterminate without a larger context and remains prone to lead into an "infinite regress[11]".

1.2.4 Variants of concept analysis

Beyond this general distinction of the elementary forms of *concept analysis* in terms of the *analysis* of *paradigmatic* elements (*concepts/ constructs/ ideas*) and *syntagmatic* items (*pieces of language/ discourse*), which, in practical terms, cannot be extricated and separated from one another, there are further distinctions in terms of *formal* and *informal concept analysis* as well as idiosyncratic conceptions that seem to grow from the interactive nature of the two basic forms and the indeterminacy of the *concept of concept*. There are also distinctions of forms of concept analysis according to the many different types of constructs posited, whereby each construct could be associated with a dedicated mode of analysis.

Here, we could provisionally distinguish *formal* and *informal concept analysis*, whereby the former plays at best a token or auxiliary role in the present work ((5.4.2.3), (8.2.2.4)), and *analysis by synthesis*, which is the main idea to be gradually developed in the work.

1.2.4.1 Formal and informal concept analysis

Even where a case can be made for a purely empirical or a purely speculative form of *concept analysis*, there remains the question of what *form* the analysis itself is to take in terms of the language used. As stated, a language is a necessity; the question merely comes down to the choice of conducting the analysis in an informal (i.e. natural) or a formal language.

Here we should note the observation that the construct *concept analysis* spans the whole spectrum from formal, mathematical[12] or logical analysis (e.g. as "mathematization of concept and concept hierarchy [that] activates mathematical methods for conceptual data analysis and knowledge processing" Ganter, 1999) to the elicitation of memories in ethnographic historical studies (or the "meaning structure of person's [...] lived experience", as in Weber, 2004; Levering, 2002[13]).

It is noteworthy that natural language is believed to be more general than any formal language (Glanville, 1982). This means that anything that can be formulated in a formal language can be formulated in a natural one. The reverse is also stated, explicitly on the example of formal logic, by Sowa, 1999. A further discussion falls outside the scope of the present chapter though the consequences of such choices will be given some thought in (7.1.1.1). Let it suffice that the formulation of some problem or phenomenon in a natural language is thought to *precede* its formulation in a formal language (for mathematical systems theory, see Bertalanffy, 1968a,

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[11]Given this motivation, a context for *philosophical terminography* will be set up experimentally and conceptually in Chapters (4) and (5), while reflections on subjects as contexts are to be set down in the Chapters (6) and (7).

[12]Kageura's (2002) study presents an example of this kind; while "folk wisdom" suggests that an "interpretative" methodology could ignore such ideas, other examples (like that of *sentiment analysis* (8) show that "positivist" or formal approaches draw on a repository of descriptive vocabulary which is in principle applicable also outside of this context. From a conceptual point of view, different methodologies do not present separate worlds without any overlap or interface.

[13]Levering regards *concept analysis* as an empirical method, which would technically qualify it to fall into the "positivist" spectrum from a methodological point of view; here we find the reverse interpretation to be also applicable.

p. 24). This implies that a *translation* is required; it should be the case for terminological *concept analyses* in particular, since a statistical preparation of lexical data should entail some interpretation of what this data is thought to *signify*. On the reverse, the invention of formal criteria could be seen as an attempt to articulate a conceptual structure that needs to analyzed before its technical operationalization.

1.2.4.2 Other mixed forms: analysis by synthesis

Therefore, different interpretations can be applied to the concept of *concept analysis* and these will then produce a predominantly empirical or conceptual reading as a matter of degree, especially when they resonate with further methodological assumptions and socio-historical *contingencies* both in the researcher and the data as researchers construct them (i.e. conceptualize the data, or make "distinctions in the flow of experience", von Glasersfeld, above).

Here, we make a distinction between the (meta-)theoretical aspects of *concept analysis*, which are treated as a cornerstone of our basic methodology, and considerations on the nature of the *praxeology* of *philosophical terminography* (4), which as a larger experimental methodology is invested in the understanding of subject-driven requirements to be inducted in the following ((2), (3)).

We only mean to establish the baseline in terms of the interaction of language and thought in the present chapter; Levering's (2002) considerations can be taken as the starting point. In the explanation of *concept analysis* as an "empirical method", some limitations, goals, and related ideas are foregrounded:

> [W]e not only seem to speak different languages, but even to live in completely different worlds. [...] These are the *aspects of the language-context that one can lose* in the concept analysis of thick concepts. The outcome of *language analysis always seems impoverished compared to the riches of language*. [...] concept analysis itself is not poetry, but, yes, it has *its eye open for the poetic elements in language*. Concept analysis is *argumentative*, it is *not evocative*. It tries to *explicate the evocative elements in language*. It tries to answer the questions of which *feelings* are *evoked by* those *words* and how it is possible that these words evoke those feelings. Such questions can only be answered by *referring to the context*. [...] concept analysis *resembles phenomenological analysis*. [...] In the area of *phenomenology*, one is *hardly concerned with a true reality* which would be found *behind the phenomenological reality*. [...] concept analysis not only provides us with *information about language*, but also with *information about the (social) reality*. In the analysis of language, *experience itself has a part to play from the beginning*.

This form of *concept analysis* applied to *thick concepts* (or analytical *thick description*) will, at its bare minimum, aim to "bring out" value judgments, while *formal concept analysis* will probably be applied to technical concepts and yield a list or network of IS A and HAS A relations (comparable to the E/R model, a simple ontology which serves to organize terminological data in the first place when such data are kept in a database storage; Neubauer 2008). With regard to the questions asked by Weber (2004) with regard to the institutional "social realities" researchers experience, the latter is superficially more likely to produce insights that fit this query.

However, mapping out the network of texts, organizations and people involved in the construction of a discourse to better illustrate its spread and distribution – an endeavor that would proceed by means of the visualization of quantitative data and formal analysis, (Athenikos and

Lin, 2009) – can lend some illustrative and explanatory power to the qualitative analysis. Thus, the one type of analysis is probably not a replacement for the other.

It can be argued that in practice, conceptual analyses would often involve an element of *synopsis* or *synthesis* (Vidal, 2007) which leads to the production of *syntagmatic* material to communicate (about) the *analysis* and its results. This can be considered *analysis by synthesis* (Beaugrande and Dressler, 1981, ch. 3, § 32). A more detailed presentation of this idea and the underlying motivations for suggesting it for the praxeology of *philosophical terminography* will however be presented in chapter (4). Here, we are still concerned with articulating the premises – or the minimal "conceptual inventory" – that enables such cumulative considerations.

1.3 Methodology

Our conceptual inventory will mainly be drawn from sociocognitive terminology and lexicology and will be largely in accordance with its stated principles, namely a *diachronic, semasiological, hermeneutic* interpretation of lexical units located in *text fragments*[14] (Temmerman, 2000, p. 54). It will be augmented by the kind of *interactive concept analysis* which we have tried to outline so far and which will be further developed.

Partly, this analysis is understood – in the sense of Levering (2002) – as the interpretation of *thick concepts* rather than as the breakdown of *general concepts* (Levering's term for a non-action guiding or connotative word of the general lexicon) into their logical properties, although our approach will take the form of a *hybrid or intermediate form* where possible and necessary. This corresponds to some extent to Rita Temmerman's view of the *middle-out approach* that was originally a part of the *termontography* method (Temmerman and Kerremans, 2003).

The distinction between *general* and *thick concept*s – which so far presents the only concession to concept theory proper – may appear confusing or at least unusual to readers who are mainly acquainted with the Aristotelian variant of concept theory (e.g. Margolis and Laurence 2011). It is therefore deserving of explanation.

According to Levering (2002), classical or *general concepts* (i.e. those describable in terms of logical structure) fall into the *category* of *general concept,* while the *category* of *thick concepts* can be construed as being reserved for non-classical constructs. Such constructs can be seen to comprise:

- gestalt-like *categories*,

- *prototype categories*, whereby a *prototype* is the "*typical member* of the extension of a referring expression" (Crystal, 2008, prototype), or the "exemplar felt to exhibit the essential meaning of a word, which *ignores all non-salient features*", and

- *stereotypes* (see (2.5)).

In our usage, no further distinction between *general concept* and *concept* will be made, although we will indicate a *thick concept* by using the term. This is necessary because the description of *thick concepts* requires a *thick description.* This can be taken to mean that the concept, its lexicalizations *and* its context must be portrayed *together* in order to make sense to insiders and outsiders alike; in terms of the sociocognitive approach to terminology description, this amounts

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[14]For a refined discussion of what these are and how they should be read, see the concluding remarks.

to placing special emphasis on what Rita Temmerman (2000, 43, above) considered *encyclopedic information*. From this treatment, we might gain an understanding of what Weber (2004) described as the "variety of factors" he thought responsible for community-specific preferences "for certain types of insight" over others.

The stated provisional nature of the considerations set down here needs to be seen as a dynamic reflection on *concept analysis* as *a* method of terminology research – having pointed out the dilemma inherent in it, it remains to be shown whether e.g. *prototype* or "family resemblance"-based concept theories can be absorbed into some version of concept analysis at a practical level without sacrificing the *heuristic power* of logical definition practices that operate along the lines of "*x* is a type of *y* which has properties *a,b,c*", as such simplifications can be seen as necessary for *organizing* the *understanding* of a concept and communicating about it.

The dynamic, interactive approach will also have to be applied recursively in order to modify the key characteristics at the center of the methodology as it is used in this chapter. This will also be an aspect of the following attempt to construct *concept analysis* as *analysis by synthesis*. Its first key element is the sociocognitive theory of terminology.

1.3.1 Sociocognitive terminology

This is an approach within the broader category of cognitive terminology (Alexeeva and Novodranova, 2006; Faber-Benitez, 2009) developed by Rita Temmerman (Temmerman, 1997; Temmerman, 1998; Temmerman, 2000) as a reaction to the perceived inadequacy and dogmatism of standardization-oriented "traditional" terminology[15]. Kageura (2002, pp. 20/21) summarized its *cognitive interest* thus:

> [...] Temmerman (1998/1999, 2000) [...] argued that some terminological phenomena can be better described by using more flexible and powerful structures of concepts such as *prototype theory* [... and for ...] the flexible relationship between concepts and terms as well as the difficulty of defining the borderline of a concept. As such they [Temmerman and others] tend toward the *natural language aspect of terminology* [.]

Concepts are furthermore not believed to be "isolated entities, but interrelated elements in texts which make them come alive" (Faber-Benitez, 2009). The focus is therefore on the family resemblance theory of mental constructs that is construed as opposed to the classical theory (see *categorization*, in an informations science context defined on page 100) and (8.2.1.1.1) for specific examples of what this could mean).

There also seems to be a preference for informal *concept analysis*. It accepts, however, that some constructs – or *concepts* in the broadest sense – do have logical structure. The statement that "[i]ntensionally, only few categories can be defined by means of necessary and sufficient characteristics and more are blurred at the edges" (Temmerman, 2000, p. 225) can be taken to mean that *some* constructs can be understood in the classical way.

Therefore, existing accounts using the classical view cannot be discarded out of hand but need to be accommodated into a synthetic or synoptic approach (Vidal, 2007) to concept description. This should be the case especially in sparsely researched areas outside the context of the life sciences. Sociocognitive terminology is likely to have been strongly influenced by the subject of Temmerman's research – the life sciences – which might make some modification of its tenets

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[15]Some (but by no means all) proponents of this variant favor the discipline label *terminology science* or (Ger.) *Terminologiewissenschaft* under observation in the following chapter (2.2).

for the present purpose necessary. We would therefore tend to give special consideration to the terminology of the human and social sciences[16], philosophical lexicography, computational and cognitive terminology; this will result in the adoption of the added concepts introduced later – and presumably many more – that is to result in the outline of *philosophical terminography*.

1.3.2 Diachrony and synchrony

In sociocognitive terminology, preference is given to the *diachronic* approach as a method to study "meaning evolution" (ibid., 126). This is in itself not unheard of (Evgenija, 1993; Budin, 1996a) but – in the face of the specific circumstances that every specific investigation entails – it would profit from some clarification of the time-frames one is looking at, especially with regard to the *half-life* of the texts – and therefore the terminology – that is in use in a given discipline (Borgman, 2007a, p. 158). The following discussion exemplifies this very point.

The discussion (e.g. Temmerman, 2000, pp. 14/15) of *diachrony* and *synchrony* as, e.g., an aspect of the construction of *terminology science* and other case examples makes reference to principles set out in older texts (ibid., Wüster, 1985, p. 2) likely to be out of step with the contemporary understanding, which can be seen as being under the influence of the phenomenon of the *acceleration* of the growth of textual data holdings and therefore the *degradation* of textual *half-life* in academic contexts and elsewhere.

A *diachronic* time-frame as it is classically understood by historical linguists is "likely to be calibrated in centuries and millenia" and therefore termed *long diachrony*, while in the context of modern *diachronic* linguistics – which includes sociocognitive terminology – the time-frame under observation tends to be "ten to thirty years" and is therefore termed *short diachrony* (Renouf, 2007, p. 38). This is a measure related to the selection of texts for observation; yet the "acceptable" age of texts in a discursive network can be seen to influence the terminology which is used in a particular text (Shreve, 2001). This is because terminology – as an object of observation in its own right (see 2.3.2, § 1) – tends to be *persistent above and beyond specific texts* and is *propagated by citation* (Budin, 1996b, pp. 95/96).

Hence, it seems advisable to account for the perceived textual *half-life* within the intersubjective, intertextual conceptual space commonly thought to constitute an academic discipline or family of disciplines (see *disciplinarity* and subject delimitation, (6.3)). Collectively, such "families" can exhibit widely diverging behaviors in this regard:

> Half-life studies are used to identify temporal variations in the use of literature by discipline. Most such studies indicate that the *humanities* have the longest citation half-life and the *sciences* the shortest, with the *social sciences* in between (Meadows 1998). In other words, scientific articles reference the most recent publications and humanities articles the least recent ones.
> Borgman, 2007b, p. 158

To sum up, *diachrony* relates to the time-spans covered by texts and terms under observation. It is not *per se* a concept which entails a logical opposition to *synchrony*, as any *diachronic* study must have a *synchronic* sub-element. *Synchronic* observation means looking at texts created *within the same slice of time*, which may well lie in the *past* in absolute terms (Nigel Vincent, personal communication). If we are comparing – as we later will – two text pieces authored

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[16]Their terminology is recognized to exhibit a strong idiosyncratic nature; Riggs, Mälkikiä, and Budin, 1997; Artus, 1982; Beaugrande, 1993.

between 1978 (e.g. the *Duden* dictionary 1978) and 1985 (e.g. the textbook Picht and Draskau 1985), we are engaging in a *synchronic study.*

If we however focus on the concept of *time-frame* as related to the propagation of terms over time and thus on the terms embedded in texts as arranged in a time series (e.g. with regard to *Terminologielehre, terminology science*), we are looking at a *time-span* of approximately 1931 *to* 1997 and thus assume a modern or *short diachronic* perspective. Assuming an interaction and interdependence between the perspectives of *diachrony* and *synchrony* therefore would appear a viable proposition:

> Methodologically, terminological lexicography is by necessity organised into synchronically narrow segments, but it also needs to be supported by very precise diachronic descriptions.
> Rey, 1995, p. 46

Ultimately, *long diachrony* also has its use as a device of *heuristic fiction.* It can help establish a *tertium comparationis* as it is provided by the etymological definitions which are, for example, used in the text of this chapter; with regard to *conceptual metaphor* (Lakoff and Johnson, 2003, ch. 22, Temmerman, 2000, p. 159, Alexiev, 2004), one might also perceive a *long diachronic* element since the supposed origins of lexical units are often traced to the *simple(r) instances of experiential meaning* encoded by said etymological definitions (compare Grix's explanation of concept under (1)).

1.3.3 Semasiology and onomasiology

Semasiology and *onomasiology* are concepts from (lexical) semantics (Bussmann, 1996; Burkhanov, 1998), lexicology (Temmerman, 2000, pp. 4/5) and lexicography (Hartmann and James, 1998) which concern the starting point of an investigation (i.e. the direction) into the *paradigmatic* construct thought to be represented by a *syntagmatic* item.

A detailed review of the use of this concept pair in the terminological literature is likely to be difficult because of the abundance of the restatements and replications of the traditional views. It is generally believed that traditional terminology (Wüster, 1985) tends towards the *onomasiological* end and reasons from the (classical) concept to the term. Translated into a more philosophical terminology, this represents a *deduction*, i.e. a reasoning from the general to the particular. Sociocognitive terminology – on balance – seems to prefer reasoning from *syntagmatic* item or term to the *paradigmatic* construct and therefore the path of *induction*, i.e. of reasoning from the particular to the general. Rita Temmerman notes:

> We take a *semasiological* approach to the studies of *categories* in the life sciences by starting from the terms that designate units of understanding and investigating how these units of understanding and their designations are defined and explained in texts. [...] In lexicology the distinction between semasiology and onomasiology identifies two different perspectives for studying the relationship between words and their semantic values. The *semasiological perspective* starts from the *formal aspect*, i.e. the words. The *onomasiological perspective* starts from the *content aspect* of the sign, i.e. the meaning. *Words with shared semantic features are grouped together.*
> Temmerman (2000, pp. xiv, 4/5)

Unlike the pseudo-dichotomy of *synchrony* and *diachrony* above, which may be resolved on a case-by-case basis using empirical evidence or even statistical data (as appropriate) to construct

viable heuristics for its resolution, the resolution of the problem of *onomasiology* vs. *semasiology* is significantly more sensitive and stratified as it is – when understood as a problem of the *evidence* used for advancing a hypothesis or knowledge claim – invested in a composite of strong and widespread philosophical and linguistic theories[17].

1.3.3.1 Philosophical aspect: deduction and induction

The primary problem here is that of the *acceptance* of the validity of inductively (i.e. *semasiologically*) obtained results, such as those upon which the study (Temmerman, 2000) as a whole rests:

> Based on traditions of terminological standardization in science [...], and on their own work in technology, Wüster, Lotte and their associates began a process of theory construction [...], for instance, Wüster's writings on terminology, culminating in [...] his posthumously published book attempting to construct an overarching theory. This effort at theoretical disarticulation [...] has generated a debate that has, paradoxically, concerned itself with describing subsequent work as *either Popperian hypothesis falsification or Kuhnian paradigm articulation.* While Popper and Kuhn can be perfectly accommodated within the same mould, *a number of our colleagues have been disingenuously Popperian in orientation, ostensibly to secure prominence in the historiography of terminology as reinventors of the wheel.*
> Antia et al. 2005

The reference there is oblique and indirect both in relation to the problematic knowledge claim and its originators. One possible, readily recognized implication is that the adherents of the sociocognitive school of terminology – if one considers it a school, like Montero-Martínez and Faber-Benítez 2009 – were in essence attempting to disprove or falsify "traditional" terminology using the evidence their research had produced. On a second glance, there are even deeper implications, which concern the way that this evidence was prepared.

In order to understand them – and relate them to *semasiology/ onomasiology* as *methodical* choice – we would need to consult a text on who Karl Popper was and what he said. With regard to the validity of inductive statements, Popper was an "anti-inductivist", which means someone who believes that a "hypothesis cannot be directly *supported*" by evidence; instead, a hypothesis can only be *falsified* by means of the hypothetic-deductive method, which is probably better known as the scientific method (Lacey, 1996, 158-161, induction).

In terminology research, for which we assumed that – whatever form of qualified or augmented – *concept analysis* or *paradigmatic analysis* is the *de facto* method, any attempt at falsifying a concept theory supporting a rival hypothesis could be reduced to an attempt to test the definition of a concept – in this case a definition of *concept* as *category* against one of *concept* as *general concept*, or concept with "classical" structure – against a counterexample – in this case a discourse sample or a widely accepted intensional definition (ibid, Margolis and Laurence 2011). This attempt would again fall into the stated dilemma or *"infinite regress"* of *concept analysis* (1.2.3.1).

In order to escape this circle, it is pragmatically advantageous to concede that theories of terminology more closely resemble *philosophical theories* than strictly *scientific* theories, which in turn means suspending – or replacing – the criterion of strict falsifiability:

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[17]In terms of our formulation, this would make it a sub-problem of the sphere of *scientificity* (3).

Karl Popper is famous for his criterion of "falsifiability" to distinguish between scientific and non-scientific theories. But what did he say about the status of philosophy? In the last few pages of a paper entitled "On the Status of Science and of Metaphysics", Popper state [sic!, PBN] the problem of philosophical theories in the following way: *"If philosophical theories are all irrefutable, how can we ever distinguish between true and false philosophical theories?"* (Popper 1958, 266). That is, how can we make *rational, persuading and useful speculations?*

Vidal, 2007

This makes the claim above doubly problematic. "Proof" obtained from *inductive reasoning* (or the *semasiological* investigation of terminological particulars) would probably not be considered fit to disprove a hypothesis from the hypothetico-deductive standpoint, and would therefore not stand up as "good" scientific practice in a more generally "scientific" discipline. This is however a feature of the aspect of *scientificity* that could be termed *theory of truth*, as will emerge later (3). *Theories of truth*, as will be seen, are however to be considered *theory-specific* rather than *subject-specific*, which necessitates further considerations ((6), (7)) on what else may contribute to perceptions of "good" practice.

The "irrefutability" of particular theories to some extent creates a logical paradox for disciplines and orientations that derive their claim to *scientificity* from the adherence to a philosophical theory (3.3.2). Therefore, one possible criterion for selecting and constructing data for a *philosophical terminography* in an organized fashion could be provided by studying the phenomenon *itself*.

For now, the upshot of thus modifying the demands placed on the *onomasiological* perspective as a means of *deducting* possible lexical forms from hypotheses about intended meaning and the *semasiological* perspective as a means of deriving support for such hypotheses from particular observations (compare the *scandals of induction* and *deduction* previously mentioned) would be to regard both perspectives of *mutually complementary* and *interacting*, and to shift attention to the second, more empirical aspect of the dichotomy.

1.3.3.2 Linguistic aspect: structuralist signifiers and signifieds

The linguistic aspect of the *semasiology/ onomasiology* dichotomy can largely be traced back to Ferdinand de Saussure and the linguistic theory of structuralism, (Culler, 1986, pp. 18-51, Glasersfeld, 1999a), where it can be considered as correlated with the distinction of the *signified* and its realm of *langue* and the *signifier* and its realm of *parole*, or the distinction of the *paradigmatic* and *syntagmatic perspectives* (after Rey 1995, the "two visions of the same object") as a shorthand for this.

At the highest level of generalization, it can be seen as the distinction of *langue* as what "words can mean as a potential" and *parole* as "what they do mean as an actual occasion" (Beaugrande, 1994), or the distinction between *language* – which is thought to be studied *paradigmatically* and *onomasiologically* – and *discourse* – which is thought to be studied *syntagmatically* and *semasiologically*.

It is fair to say that this distinction is, in some way, accepted in sociocognitive and traditional terminology alike, which may be due to the fact that any attempt to *overcome* structuralism must *engage with* structuralism[18]. This observation should constitute a starting point for the

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[18] How Budin (2007a, p. 67) formulated it in a similar context: "the relation between post-modernism and modernism is of an oedipal nature: Post-modernism defines itself through the opposition to modernism". This can

present discussion. In sociocognitive terminology, its relevance is underlined from the perspective of post-structuralism and deconstruction, with reference to Jacques Derrida:

> Against the essentialist notion of certainty of meaning, Derrida mobilises the *central insight of structuralism – that meaning is not inherent in signs, nor in what they refer to, but results purely from the relationships between them*."
> Temmerman, 2000, p. 55

With regard to this relationship, Rondeau (1980, p. 14), notes that "[t]he term is essentially a linguistic sign in the sense defined by F. de Saussure (1916), that is, a linguistic unit having an *expression form* and a *meaning*", or a *signifier* and a *signified*.

If there is a distinction between an "expression form" and its "meaning", and if the meaning is *arbitrarily* associated with the form while meanings relate *to each other* on the potential or *paradigmatic* level, and the *combination* of expressions is likewise arbitrary (Temmerman, 2000, p. 58) and conventional on a *syntagmatic* level[19], then an interpretation of a particular instance of a sign also presupposes the interaction of these two levels of observation and reasoning in the act of *concept analysis*.

When *syntax* and *syntagmatic* are thus reduced to their etymological "bare bones" from the *long diachronic* perspective, one can derive a justification for the synthetic treatment from the observation that on the *paradigmatic* view, experiential phenomena are "put together" (or gathered), while the "arrangement" is put "in order" or organized on the *syntagmatic* view. This is most notable once the association with an expression form has taken place. However, this in itself does not tell us how to *formulate* the process, nor does it give any indication of the *constraints* that orient the "weaving of this conceptual web" which apparently extends into realm of *signs*.

1.4 Sociocognitive terminology and interactive concept analysis

So far, this chapter has only addressed itself to a list of distinctions and dimensions that have been inherited from philosophy, terminology, lexicology and linguistics (*diachrony*, *synchrony*, *semasiology*, *onomasiology*, *induction*, *deduction*, *paradigmaticity* and *syntagmaticity*) and which have been enumerated and largely construed as continua with (quasi-)dichotomous end-points. The result may be visualized thus:

synchronic ⟷ diachronic
semasiological ⟷ onomasiological
inductive ⟷ deductive
syntagmatic ⟷ paradigmatic
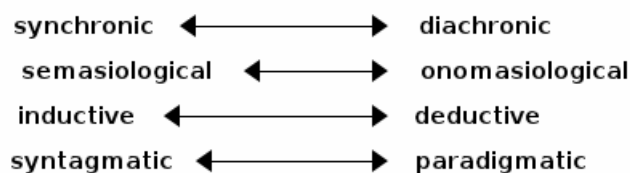
Figure 1.1: Overlaying continua of perspectives.

What, however, is the methodological significance of this and how should it be construed for further development? We assume axiomatically that each end-point of each continuum is an *ideal type* or a "description of a phenomenon in its abstract form which can assist in comparing and

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be considered applicable insofar as *post-modernism* and *post-structuralism* are regarded as interchangeable, Schmidt and Gessmann, 2009, Dekonstruktion; Routledge Contributors, 2000, 701, poststructuralism.

[19]The term *syntax* was originally derived "from Gk. *syntaxis* [and meant] 'a *putting together* or *in order, arrangement*'", Harper 2012.

classifying specific phenomena" (Grix, 2001, glossary). As this construct originated – presumably – from speculative philosophy (Vidal 2007), it suggests *paradigmatic* ideals which may perhaps be empirically *approached*, but never *reached*. In this regard, the dichotomies *themselves* may be considered *heuristic fictions*.

They should be treated accordingly. Expending effort on approaching one idealized end of any continuum may impair the aim of producing a *thick description* (via *concept analysis*) which layers perspectives and provides a multidimensional impression of a phenomenon that appears as an experiential whole (Temmerman, 2000, p. 64). This is also supported by the observation that end-points appear – as a general rule – inextricably linked, and only intelligible *in relation to each other*, a point that may be extrapolated from the post-structuralist insight above.

While this applies to the *paradigmatic* aspect of *concept analysis*, the limits on the empirical or *syntagmatic* aspect of *concept analysis* are that only a limited range of discursive material will be available at any given time and in any given language, and that only a small fraction of what is available can be subjected to detailed analysis while even more material is becoming potentially available or has been available to begin with; this latter should follow from the idea of a discipline-specific *half-life* as an aspect *diachrony*.

A further consequence of this is that even the material that is available and analyzable may be so distant in time and/ or in terms of interpretation – which is sometimes conditioned by the tacit *conventions* of smaller factions inside the heuristic "container" of *culture* – that an extra effort must be expended in the reduction of this distance. This should have been experimentally demonstrated by the above discussion of the perceived value of *induction* and thus should have been flagged up for deeper investigation ((3), (6), (7)).

Furthermore, since our hypothetical *thick concepts* have cultural significance and are analyzed in the *context* of a *culture* (at whatever level of segmentation), they are under the influence of "process rules" like norms and *conventions*, which are to be seen as parts of *thick concepts* layered onto the "entity" or factual aspect. This also points to the difficulty of distinguishing the one from the other and putting the whole construct in order formulatively: "[W]e do not "reconstruct" "codes or norms or conventions" as they really are. Rather, we construct them. In translation studies, as in other disciplines, "facts" are not given but made", Hermans, 1999, p. 90.

The epistemology – or *theory of knowledge*, which cover the theory of meaning or semantics generally by way of explanatory "bandwidth" – most suitable for the conduct of the kind of interactive, "thick" *concept analysis* – or act of interpretation and relation – will have to account for these limitations and therefore needs to be oriented *towards* the experiencing subject. In a way, this entails that it would also be likely to orient *away* from the inaccessible or intractable "ontic" reality of idealized absolutes and observer-independent structures[20].

1.4.1 Middle-out approach and embodiment

Such an epistemology will likely be found in the family of constructivist approaches. *Experiential realism* (Lakoff and Johnson, 2003), for example, is a form of constructivism which has been absorbed into the theory of sociocognitive terminology:

> [A]n alternative approach [to objectivism] is possible (*relativism*) in which "any truly veridical epistemological access to reality is denied" (Ortony 1979: 1). This relativist approach is also known as *constructivism* (Ortony 1979: 1) *or experientialism*

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[20]See also the discussion of "radical realism" and "radical idealism" in Beaugrande (1997d, ch. 3 §§ 29-32).

(Johnson 1987). *The central idea is that cognition is the result of mental construction based on experience.*
   Temmerman, 2000, 161, my emphasis

Its person-centric (subjective) correlate can be seen in the idea of *understanding* as a process of concept formation ("Understanding is an embodied experience. Concepts and their features grow out of bodily experience and are understood in terms of it", ibid., 65), while its methodological consequence can be seen in the *middle-out approach* as it is embedded in the practice of *termontography*:

   The termontography method works *middle-out.* It combines top-down and bottom-up approaches in order to ideally capture and represent knowledge acquired from texts [...] *it reveals lexical gaps in individual languages, as well as concepts that are particular to one language only.*"
   Temmerman and Kerremans, 2003

In the context of the discussion in this chapter, the idea of the *middle-out approach,* which refers to termontographers starting with a predefined subject structure (i.e. *top-down*) and then modifying it according to their *understanding* of texts (i.e. *bottom-up*; ibid.) of course needs to be adapted to our more general idea of *onomasiology* and *semasiology* as *paradigmatic* and *syntagmatic* readings of terms in texts and the philosophical or cognitive *deduction* or *induction* of the definitions of the *concepts* they signify.

   This idea is mainly adopted in order to provide orientation. Whether it presents a solution or a problem relative to subject-specific concerns in philosophy or the human sciences is to be tested later (6.1.2.1). Augmented by our epistemological premises and the practice of the *middle-out approach*, our methodology can now be represented in this figure. The representation itself is a modification of similar wave-shaped structures that depict dynamic processes and/ or alternative categorizations (Beaugrande, 1991; Glasersfeld, 1999a).
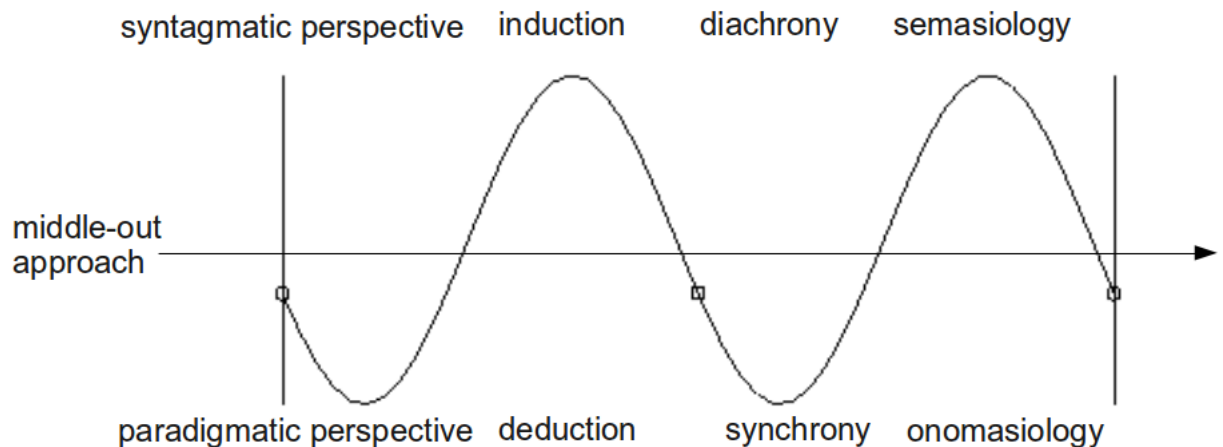
Figure 1.2: Modified middle-out perspective for the analysis of *thick concept*s.

   The "sine wave" in the center of the graphic and the points where it intersects the line of the *middle-out approach* are still unaccounted for. They will be explained in the following.

1.4.2 Radical constructivist epistemology

The representation of the wave indicates, in a hypothetical and stylized fashion, one mental "mechanism" which – among many others – may have a bearing on the complex process of embodied understanding. It is the phenomenon of *attention.* Putting forward possible explanations of the operation of such mental mechanisms is attempted in the field of psychological epistemology (Raskin, 2002), of which radical constructivism (Glasersfeld, 1995) is one example.

Radical constructivism argues that observers "are only aware of their own internal workings" (Raskin, 2008), which can be seen as fitting the idea of *embodied* understanding. However, while this is readily stated, the principle should have relatively far-reaching consequences which concern both the analysis and synthesis of concepts and discourses and the understanding of these practices from a practical point of view.

To explain and adapt some concepts of radical constructivism – in particular scheme theory – is one purpose of the present work as a whole and a synopsis would exceed the scope of this section. For now, it should be sufficient to provide an explanation for how *attention* comes to to coincide with the one or the other parameter of an *ideal type* in the graph.

Regarding the *process* of an applied *concept analysis*, one could consult the following fragment which provides the mental image by which *attention* could be expressed in order to clear the gap between the "two realities" of *paradigmaticity* and *syntagmaticity*:

> The point I want to stress is that from our perspective it is *attention* and above all its movement that generate the *conceptual structures* and thus *the things we talk about.* These items [...] cannot have an existence of their own but originate through the *operations of an experiencer or observer.* [...] The problem of meaning thus comes down to the problem of how we generate units in our experience such that we can *associate them with words*, and how we *relate these units to form larger conceptual structures.* A model to illustrate these generative operations [...] was based on a novel conception of the mechanism of *attention.* Instead of thinking of attention as a kind of searchlight that illuminates parts of the experiential field, we think of it as *a pulse whose beat could either coincide with sensory signals or remain empty and unfocused.*
> Glasersfeld, 1999a

Thus, the "waveform" can be seen as representing the "pulse of attention" as it "collides" with the phenomena that have been interpreted in terms of the ideal-typical categories discussed so far. With this example provided, it remains to be noted that the epistemological aspect of terminology research cannot be explained by radical constructivism alone. Rather, this new addition needs to be contextualized within the framework of existing terminological epistemologies[21]. From this integration, new insights are to be expected; think, for example, of reflecting on ATTENTION IS A PULSE as a conceptual metaphor *itself.* Such considerations are – in a systematic form – at best incipient in the present work. It is primarily concerned with collecting the elements of a formulative vocabulary and with associating them with experiential phenomena.

Shifting our attention back to the methodological graph, we are still missing an explanation for the intersection of "attentional wave" and the "axis" of the *middle-out perspective*, which should

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[21]e.g. with experientialism, according to Temmerman above, or with evolutionary epistemology as used by Budin (1996b). While the fit between radical constructivism and the former should be self-explanatory, it is noteworthy that various forms of constructivism and evolutionary epistemology can also coexist (Raskin, 2008).

be provided by a preliminary account of *interpretation* (which is to be further amplified in the appropriate context).

1.4.3 Hermeneutics and philology

By and large, the notion of *understanding* – or *verstehen*, a German loan term[22] which is used by Rita Temmerman – perhaps clarifies the relation of the tradition of *hermeneutics* to the contemporary ideas of post-structuralism and constructivism, both of which appear to have reactivated the idea of *understanding* in their respective frameworks. Herein lies a potential problem of *underdetermination* which makes it difficult to discern the *operations* that cause one to understand:

> Concerning interpretation. Hermeneutics, originating in Biblical studies, has developed, through F.Schleiermacher (1768–1834) and W.Dilthey (1833–1911) in particular, to an approach now associated especially with H.-G.Gadamer (1900–) which in *interpreting history and thought denies both that there is a single objective true interpretation transcending all viewpoints* and that we are for ever confined within our own viewpoint. *Interpretation is rather something to be arrived at by a gradual interplay between the subject-matter and the interpreter's initial position.*
>
> Lacey, 1996, hermeneutics

Considered thus, *hermeneutics* implies nothing that goes far beyond what has been said about embodied experience and the observer's internal cognitive operations, which are inseparable from the process of experiencing. A more interesting conception of *understanding* and *hermeneutics* would point to their methodological significance or application in practice, e.g. in the practice of philology:

> The philologists may not have had a scientific method. And yet we inherited from them the academic editions of classical and oriental texts we are still using today, together with *comprehensive dictionaries, or rather glossaries, citing each noteworthy occurrence of any word embedded in its contexts and still providing an irreplaceable aid in understanding these texts.*
>
> Teubert, 2004, 78, my emphasis

So, we can see that the *practice* of *hermeneutics* involves the preparation of collections of *syntagmatic* items or records thereof (i.e. text fragments, concordances and conceptual records) and their manipulation in the process of understanding; this could be seen as an area in which philology interfaces with philosophical lexicography (Roelke, 1999) and other relevant practices. The finer points of this will however be elaborated later (5).

Relating the observation back to our initial schematic, we could state the following: where such records are created, we can tentatively locate the *intersection* of "attentional waveform" and the vector of the *middle-out approach*. Since these record are however only indications of what the creators of the source materials *might have wanted to communicate* in terms of their *concepts*, their final interpretation is the interpreter's construct. Insofar as the interpretation is "relayed" further in *syntagmatic* form, it can be seen as the *model* of the workings of the conceptual "black box" (as understood by Kretzenbacher, 1998 under (1.1)). Nothing about the construction of the model can be said yet; as a matter of principle, *concept analysis* is therefore best thought of

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[22]"In the tradition of hermeneutics Verstehen was a consequence of text interpretations", Temmerman, 2000, p. 54.

as one step on way to test the viability of these *models*. The testing can ultimately only happen in communication (Glasersfeld, 1981).

This for now leaves open the question as to how exactly the *codification* of interpretations and therefore any conceivable practice of *philosophical terminography* can be supposed to work; it will constitute the subject matter of the later chapters of the thesis.

1.4.4 Interaction and holism

Before the methodology can be applied to cases and subjected to further modifications, two final theoretical and methodical aspects need to be clarified. The first is that of the relation between the experiential and subjective reality in which interactive *concept analyses* take place. The second concerns the role of language, *syntagmatically* considered as *parole* or *discourse*.

Normally, the terminological model of the relationship between "world, mind and language" is construed as a *trichotomy*[23], often represented in the graphic model of the "semiotic triangle" (Temmerman, 2000, 58 ff.). Since we are dealing with the *immaterial objects* of cultural perceptions (Picht, 2008) and a purely subjective experiential reality, we can collapse the "world" aspect into "language" and are therefore left with a continuum between "language" and "mind", or the *paradigmatic* and *syntagmatic* planes of description. The "gap" between them will be dynamically bridged by the shifting of *attention*, as it has already been noted.

Insofar as any reference to the larger social reality must be made, it will be introduced in the form of *heuristic fictions* or their probabilistic construction. This might appear unusual to linguists and terminologists, but as a practice, it is not without precedent:

> Many people have distanced themselves from the idea that there is a separation between language and reality. Linked with the *idea of separate worlds* – one with *words and concepts*, and another with *matter and events* – is the idea of a *dualism* between methods, an idea which should also be condemned. *A separation between analytical methods, which provide information about language, and empirical methods, which inform about reality, is untenable.* Formulated thus, my viewpoint can hardly be contradicted, but I want to risk taking it further. From the premise that analytical and empirical methods cannot be strictly separated, I conclude that *analytical methods must be empirical methods up to a point.*
> Levering, 2002

The second problem in applying an interactive *concept analysis* to the extraction of "thick aspects" from what is probably considered a *general concept* like *terminology science* is that it presents another *dilemma*, similar to the one already sketched out in (1.1.2).

Dilemma here is not taken to a mean – as in *synchronic* usage – that it presents a choice between two unfavorable positions or a "state of uncertainty or perplexity especially as requiring a choice between equally unfavorable options", WordNet 2010. Rather, the formulation suggests that there are simply *two* propositions inherent in the concept – this being the logical part of the analysis – as in the *diachronic* understanding of *dilemma* which reverts to the Greek prefix *di-* as simply meaning "two" ("double proposition, a technical term in rhetoric"; Harper 2012).

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[23]This clearly shows that the epistemic interest motivating a theory of terminology is of central importance. Introducing an aspect of "extralinguistic" world into a model for terminological reference is a sensible and necessary step where *physical objects* are to be controlled or ordered by means of a terminology or nomenclature. For a descriptive terminology of humanistic disciplines, however, having to account for this aspect can seem unhelpful and complicates matters.

This *dilemma* is technically the distinction between *denotation* and *connotation*. While *denotations* can be dealt with in terms of logical or *paradigmatic concept analysis*, the analysis of *connotations* more likely calls for a different concept theory, i.e. some "family resemblance" (*prototype* and/ or *stereotype*) theory (e.g. Alexiev 2004) or a *thick description* starting from the *syntagmatic* example as a *communication by someone in particular*. In the latter sense, we should be interested in what a term connotes from *their vantage point*.

We have remained agnostic to concept theory *per se* since it makes strong assumptions about what is in other individual's heads and therefore about an unknowable ontic reality.

However, it should be possible to apply our methodology *to texts on concept theory* and thus build up an *experiential understanding* which might be at variance with what expressed in the texts – this could be seen as a cognitive effect of *assimilation and accommodation* (Glasersfeld, 1981).

Strict uniformity in terms of a "unified concept theory" is neither possible nor intended. *Embodied understanding* is employed in statements on connotative meanings in the source language (in the case of multilingual terminology) in relation to their cultural significance, which will be based our lifelong first-hand experience of this *culture*. When such connotative meanings are to be treated in relation to the target *culture* or language, such statements shall be deducted from the interpretation of a more substantial body of reference "fragments" and such experience as we possess.

Similar to the methodology above – which is itself a heuristic – this needs to be seen as an ad-hoc tactic devised solely with the respective stated objective in mind. It represents thus a case of "analytical casuistry", as described and adapted to terminology in Antia et al. (2005). This "analytical casuistry" is interpreted – in terms of the larger aim – as an approach where the methodology emerges from the process of active observer/ observed interaction (Riegler, 2006; Glanville, 1982) and therefore as *regenerative theory construction*[24]. The resulting formulation is then triangulated against existing scholarship as it is communicated by other observers.

1.5 Conclusion

Terminology can be considered a coherent field of study, yet theories of terminology are under the influence of individual impressions which appear incommensurable.

Therefore, and for epistemological, theoretical and heuristic reasons, it seems advantageous to leave the *concept of concept per se* undefined – though not unproblematized – and to gather different conceptions of concepts or aspects of concept theories – which are all regarded as relative – under the category of concept to gain operational breadth for the practical method of *concept analysis*.

The concepts that need to be provisionally defined for further discussion display category structure, i.e. they are defined – or rather described in language – by the explicitation of logical or *semantic* and *encyclopedic* characteristics. These are drawn from *discourse* – the *syntagmatic* level which, in the view adopted here, includes works of reference. The following five concepts (*culture, thick concept, thick description, paradigmaticity, syntagmaticity*) are considered operationally central:

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[24]Another alternative description for this would be the idea of an "evolutionary dialectic", Beaugrande, 1997b, ch. 3, § 90.

1. *Culture.* The definition of culture used here is anthropological. By culture we understand the schemes and models of reality interpretation in the context of modes of behavior, institutions, ideologies and myths which make societies *paradigmatically* distinguishable, and the system of communication which includes descriptions of the *paradigmatic* system in natural language and on a *syntagmatic* level.

2. *Thick concept.* A mental construct that displays *category* structure but includes *norms* and *values.* Thick concepts influence people's actions. They are normally subject to *thick description.* Thick concepts can be construed as the opposite or counterpart of *general,* or logical *concept*s.

3. *Thick description.* A layering of perspectives on and interpretations of *thick concepts* by both insiders and outsiders relative to a cultural group. It activates a *paradigmatic* internal frame of reference in the recipient and is reflected in *syntagmatic* exposition or communication.

4. *Syntagmaticity and paradigmaticity.* These are *general concepts* which are in use in several related disciplines and at different levels of abstraction (*semiotics, linguistics, semantics, lexicography, terminology*). They can be construed as "thick" when a superimposition of their properties in each discipline takes place. *Paradigmaticity* is the property of being related to a potentially available, conceptual meaning. *Syntagmaticity* is the property of being related to an intended meaning empirically derived from the actual usage of a sign in context. *Paradigmatic* fields of concepts or semantic fields are constructed by abstraction from *syntagmatic* instances of terms by terminographers and lexicographers. In a broader social context, it should be possible to superimpose *syntagmaticity* on empirical/ positivist and *paradigmaticity* on conceptual/ interpretative research philosophies.

Since works of reference are also considered as *syntagmatic* discourse, a distinction needs to be made with regard to the concept of *paradigmaticity. Paradigmaticity* proper resides in the individual's cognitive conceptual system, while other's *paradigmatic* expositions are *experienced* on the *syntagmatic* level. That the idea of an *absolute paradigmatic* level is problematic can be explained in terms of the *mind-body problem.* Interpreting a *syntagmatic* artifact reconfigures the internal conceptual structure in the person. The *mind-body problem* may be avoided by focusing on the *process* of this reconfiguration. *Paradigmatic* is therefore reinterpreted as meaning *cognitive* and practically amounts to the completion or substitution of something that is not symbolically expressed in a piece of *syntagmatic* discourse.

Any method that makes hypotheses about such a process is a subjective heuristic. There is, subjectively speaking, no way of transcending either *paradigmatic* or *syntagmatic culture* when analyzing its constructs, which are the researcher's own constructs. Interpretations about *culture* are embedded in *culture* and this can be difficult to formulate. Attempts to do so can give rise to the metaphorical language or stylistic self-reference used by some system theoreticians. *Concept analysis* needs to be dynamic and capable of alternating between the *paradigmatic* and *syntagmatic* levels of *thick concepts.* Thus, an interactive approach to *concept analysis* needs to be constructed.

Any such method will need some anchoring in an empirical data-base, or rather in samples of *syntagmatic* discourse from which it can interact with the *paradigmatic* constructions. In order

to achieve this *interactive concept analysis*, we need to consider conventional or stereotypical ideas of conceptual and empirical research and their impact on the methods of terminology.

Positivism and Interpretivism are a cliché for perspectives that value (*syntagmatic*) data over (*paradigmatic*) human meaning or the reverse. This way of thinking seems to have become particularly entrenched in social science. The question is whether there is an analogous problem in terminology research.

Any research (including terminology research) involves observation and explanation. Their "ratio" varies according to the epistemic interest in question. "Positivism" and "Interpretivism" are distinguished by choice of method rather than by philosophical differences. Why certain methods are preferred by researchers may be attributed to social pressures in their environment. Some disciplines, like management information systems, have a catalog of methods that correspond with one outlook or the other. By way of simplification, we can however assume that in terminology research, we are dealing with *one* method that has *divergent* aspects. Specifically, this means that *concept analysis* can be understood as *paradigmatic analysis* and associated with speculative philosophy or as *syntagmatic analysis* and associated with discourse analysis.

Terminology research has theoretical and applied aspects. The method of *concept analysis* is supported by applied empirical techniques (*corpus processing, bibliography*). Theoretical terminology revolves around cognitive and philosophical questions grounded in data, and empirical research is under the influence of conceptual precepts. In this context, the "positivist"/ "interpretivist" dichotomy can be construed as a conflict between conceptual and empirical research. Conceptual research is associated with the humanistic disciplines, empirical research with the natural sciences. Disagreement between these priorities can be seen as a form of long-term social pressure (stemming from tradition). It influences individual's mind-sets through training (on the *paradigmatic* level) and terminology use in specialized literature (on the *syntagmatic* level). Again, these poles interact. *Concept analysis* here starts out on the *syntagmatic* level and from a historical or *diachronic* perspective.

The question of a "research philosophy" in terminology is approached indirectly. *Concept analysis* is not universally considered central, but this assumption is retained as a *heuristic fiction* to aid *thick description*. A discussion of "positivism" and "interpretivism" is not directly related to its methodology, since the object of research is *language* or *discourse* (*signifiers* and *signifieds*). *Concept analysis* is taken to *include conceptual and empirical aspects*.

Paradigmatic or *philosophical concept analysis* attempts to formulate the definitions of concepts and tests them against fictional opposites ("thought experiments"). It is a somewhat circular concept, since *analysis* itself can be understood as the study of concepts and their relations. The problem is analogous to that of the analysis of cultural concepts when embedded in the context of the *culture*. The concepts which emerge from the analysis may modify the analysis, which becomes in principle open-ended. This is the *dilemma* of *concept analysis*.

Beyond this, the definitions of concepts cannot be extricated from the language in which they are formulated. Philosophical concept analysis therefore presupposes discourse analysis. However, a distinction can be made on the grounds that *paradigmatic analysis* adds an implicit dimension to the explicit one of discourse analysis. Depending on which one is given preference, it can be argued *ad infinitum* that *concept analysis* – as a holistic concept involving both types of analysis – is an empirical ("positivist") or conceptual ("interpretivist") instrument.

Due to the staged and inextricable nature of *concept analysis*, mixed forms are conceivable.

The distinction of *formal* and *informal concept analysis* proceeds by the type of syntagmatic language used, while further variety in terms of the types of *informal analyses* is perhaps due to the *indeterminacy* of the *concept of concept*.

If language is recognized as a necessity, then a distinction can be made in terms of whether the *concept analysis* is conducted in a *formal* or *natural language*. *Formal* and *natural languages* are sometimes held to be mutually translatable, but for terminological analysis the direction would be *from natural to formal*, which in the latter case implies the mathematization or conversion into formal logic of a conceptual structure. If *concept analysis* is restricted to analyses in *natural language*, its aim is the translation of a *paradigmatic* human "meaning structure" into a natural language discourse for analysis. *Formal analysis* can also be visualized. However, as a method *formal concept analysis* is agnostic to the empirical or conceptual "content" of concepts. A construction or conceptualization is required in any case. Therefore, the two forms can be considered as being symbiotic.

Depending on which aspect concept analysts emphasize, the form of analysis they chose, and how the data or observation resonates with their experience, other forms are conceivable. One is the *analysis of thick concepts*, proposed by Levering, which sees *concepts analysis* as an *empirical* method and emphasis the reality-shaping nature of language and the argumentative, constructive aspect of *concept analysis* as well as its *subjectivity*. The present experimental model of *concept analysis* builds on this conception but suggests further modification using, e.g. visual transformations of quantitative data or the semi-formal organization of textual and experiential data to enhance its illustrative power. Since mixed forms of *concept analysis* often presuppose the *production* of *syntagmatic* material, they can be considered *analysis by synthesis*.

The term/ discipline name *"terminology science"* is a *syntagmatic* sample to which a *concept analysis* of any form could be applied. Whether there is a concept of *terminology science* as distinct from *terminology research* in not entirely clear. Critiques of the term/ concept take both *syntagmatic* and *paradigmatic* routes and contain value judgments ("thick" aspects) that imply *paradigmatic* research philosophies. However, they will also be under the influence of linguistic and therefore broader *cultural norms*.

The methodology in question draws on traditional and sociocognitive terminology and lexicology in terms of its parameters or dimensions (*diachrony, synchrony, semasiology, onomasiology, induction, deduction*, the *paradigmatic* and the *syntagmatic* perspective) for the purpose of modifying the method of *concept analysis*. Building on the idea of the *middle-out approach*, it is to be developed so that it can accommodate both "general" (i.e. logical) and "thick" aspects of concept description. While the logical aspects emerge from classical concept theory, the "thick aspects" need to be seen in terms of the *layering of interpretations* that provide cultural and encyclopedic depth to the description. Nevertheless, some thought should also be given to the explanatory elegance of the methodology. The formulation of a methodology can be considered *analysis by synthesis*.

Sociocognitive terminology is positioned as a variant of cognitive terminology which reacts against the perceived inflexibility of classical or traditional terminology. It emphasizes the *prototype* structure of concepts (*categories*), the change and evolution of term/ concept relationships and the context-dependence of terminology as well as its natural (informal) language aspect in general. However, it does admit the possibility that some concepts are logically structured. This necessitates the accommodation of classical theories. It is partly shaped by the object of its

research (the life sciences). Synthetic modifications are necessary if sociocognitive terminology is applied *outside* this field, e.g. in the human and social sciences.

Sociocognitive terminology belongs to the *diachronic* traditions of terminology. The concepts of *diachrony* and *synchrony* need to be qualified in terms of the parameters of time-frame, time-span and *half-life*. Time-span and *half-life* are relative to each other and *half-life* is conditioned by the norms of the subject field under investigation. Generally, sociocognitive terminology appears to study *short diachronic* time-spans in terms of texts and probably *long diachronic* time-spans in terms of terms (due to its interest in metaphorization). It also takes synchronic time-frames in terms of discourse samples or fragments into consideration. Terminology in texts can be considered to be under the influence of texts.

Semasiology and *onomasiology* are concepts from lexical semantics which have philosophical and linguistic correlates. They are fundamental to any conception of terminology, with "traditional" terminology closer to the *onomasiological* and sociocognitive terminology closer to the *semasiological* end of the spectrum.

Semasiology and *onomasiology* are, philosophically understood, ways of reasoning about the implications of terminological evidence and correspond to *induction* and *deduction*, respectively. Sociocognitive terminology is seen by some as an attempt to falsify the (*deductive*) principles of traditional terminology. Under the hypothetico-deductive view of K. Popper, this is probably not admissible since the experimental results are obtained by way of *induction* (*semasiology*). However, if terminological concept theories are considered speculative philosophical theories, their truth or falsehood cannot be determined using this measure. Since *inductive* and *deductive* reasoning *interact*, it is unlikely that there is a clear-cut dichotomy. This is however a conceptual or *paradigmatic* aspect of *semasiology* and *onomasiology*.

On a more empirical, *syntagmatic* level, *semasiology* and *onomasiology* can be associated with *syntagmatic* and *paradigmatic* perspectives on language, which can be derived from Saussure's distinction of *langue* and *parole*, or *language* and *discourse*. At its simplest, this is a distinction of the potential meanings (or concepts) that terms *can* represent and the way that they are *used* in actual texts. Neither "traditional" nor sociocognitive terminology seems to transcend this way of thinking about the distinction, although they draw different conclusions from it (analogous to structuralism vs. post-structuralism). Its consequence can be seen in the view that the "link" or association between *signifier*/ term and *signified*/ concept is in principle *arbitrary* between levels; so is the relation between several *signifieds* on the *paradigmatic* and several *signifiers* on the *syntagmatic* level. In the act of interpretation, the *paradigmatic*, potential concepts and the *syntagmatic*, combinatory terms are by necessity *connected*.

Each item of the inventory of dichotomic distinctions can, under consideration of their interactive properties, be construed as a *continuum* running, e.g. from *synchronic* to *diachronic*, from *semasiological* to *onomasiological*, etc. These continua may be considered overlaying scales which need to be traversed in conducting *concept analysis*. An end-point of either scale will never be reached due to practical constraints (amount of material, inability to transcend cultural norms, etc.). Also, attempting to approach extreme ends will render an analysis "thin" rather "thick". The constraints on analysis are discussed in the context of epistemology, and epistemology will to some extent include a theory of semantics. An epistemological position that is oriented towards a practical perspective and the constraints identified earlier will need to be identified.

Constructivist epistemology sets constraints by denying access to ontic (or absolute) reality.

Subjective, embodied reality is seen as being apprehended in terms of *understanding*, which is seen to have a basis in experience. The methodological consequence of this view is, e.g. the *middle-out approach* in the sociocognitive terminographic practice ("termontography"), which avoids both the "top-down" and "bottom-up" approach to knowledge representation by combining subject-oriented (*onomasiological*) and term-oriented (*semasiological*) methods of terminology description. In terms of *attention*, this procedure can be seen to generate an alternating "motion" of *attention* between the end-points of the idealized scales or continua.

Radical constructivism is a variety of psychological epistemology that attempts to explain the working of what has been termed, metaphorically, the "motion" of *attention*. It argues that observers (or concept analysts, in this context) can only know their internal constructions, i.e. analyze the concepts which they have themselves built in experiencing the world "middle-out". Concepts which (on the *paradigmatic* level) are associated with terms (on the *syntagmatic* level) are hypothesized to be combined into larger structures by the "motion" of attention in the process of *understanding*. This is what makes its application promising. Radical constructivism in terminology should be combined with other epistemologies already adapted to terminological theories in order to provide new insights and angles on terminological phenomena.

The process of *understanding* itself is traditionally explained (and functions as a technical term) in the context of *hermeneutics*. *Hermeneutics* is the art of interpreting history, thought and texts that also emphasizes the subjectivity of experience and the interaction between experiencer/ interpreter (subject) and text/ term (object). Its practice is considered under the label of *philology*. From it, the practice of compiling glossaries of terms in context is derived. Since *philology* emphasizes passive understanding rather than active encoding, it is necessary to add an active element of communicating concept analyses by the *synthesis* or synopsis of new texts with conceptual/ terminological content to test the models of concepts in the world of experience (and the *syntagmatic* level).

The two final hurdles to applying this methodology are to be seen in overcoming the trichotomy of world-mind-language inherited from some traditions of terminology on the one hand and the complex interplay of *denotation* and *connotation* and processes of interpretation in terms of different natural languages on the other. A discussion of monolithic concept theories has so far been avoided under heuristic considerations. In the area of the literature-based humanistic disciplines, a separation between a separate world of extralinguistic entities and the *paradigmatic* and *syntagmatic* levels of discourse is neither strictly necessary nor desirable. The so-called dualism between methods is therefore disregarded. Concepts of cultural perception are immaterial objects that are not be perceptible if not formulated in language. In terms of concept theory, it needs to be noted that flexibility is needed insofar as the aspects of an indeterminate concept (roughly corresponding to *denotation* and *connotation*) are to be perceived as a whole and so a different concept theory might, in some cases, be needed in order to be applied to the denotative and connotative aspects of the same terminological unit. These facets are then (re-)integrated into a *thick description*.

2 Interactive concept analysis and stereotype induction

Introduction

The last chapter has dealt with the dichotomy of analyzing concepts by ratiocination or observation and has evaluated four common dimensions of terminology research (*diachrony, synchrony, onomasiology, semasiology,* and, as a function thereof, *paradigmaticity* and *syntagmaticity*). We have augmented the sociocognitive approach with the dimension of *attention* and built an adjusted model of *concept analysis* on the grounds of philosophical considerations, like the *mind-body problem* and the problem of *induction.* Thereby we have connected philosophical concepts like *induction* and *deduction* with our perspective on terminology research and have thus prepared the ground for the rest of the treatise.

This chapter presents a concrete application of the reflections on *concept analysis* in the first chapter of this thesis to a number of impressionistic cases, starting with a controversy in *secondary term formation* and then extending it to the application of stereotype theory to various classification tasks basic for a *philosophical terminography.* If we take our premises seriously, it follows that any application of the principles modifies them recursively; this is both to be expected and welcomed as it presents a case of conceptual and procedural learning. Reflections on *regenerative theory construction* itself will however be the subject of the following chapters and go beyond our present analytical aim. One modification that is due to be introduced regardless of this however concerns the working definition of the *concept of concept*, which been deliberately left as a blank slate in the preceding discussion. This was done in the interest of remaining agnostic to metaphysical preconceptions.

In the present chapter, we cannot escape introducing such assumptions as we are talking about phenomena of social reality; these should be regarded as *heuristic fictions* or *as if conjectures* necessary for "the purpose of social interaction" (Glasersfeld, 1995, p. 40) or, in this case, the *modeling* of how this it is supposed to work in a specific sector of consensual experience where meta-communication about terminological formations and their representational intent takes place. These *fictions* of the *sociological imagination* (a term coined by Restivo (2008) in a riposte to the below) and – by necessity – the linguistic imagination are however not invented out of thin air; they are driven by a palpable case and corpus evidence and therefore based on empirical findings. However, what can we understand by the *sociological imagination?*

> Radical constructivism does not purport to describe a real world but merely proposes a model of *how one could imagine knowledge to be built up.* The building up of course involves the concept of society. *Just as the meanings of words have to be abstracted by each future language user from his or her own experiences and interpretation of heard or read words, so the concept of society has to be formed by each individual by means of generalization from his or her own experiences.* It is irrelevant

> whether or not you believe that society exists in its own right, knowledge of society
> can be gathered only from your own experience.
> Glasersfeld, 2008b, 63, my emphasis

This assists the implementation and continuation of our reflections on the inextricable, interactive nature of observation and explanation in Chapter (1). Here, the case in question is provided by the coinage, criticism and textual "afterlife" of the term *terminology science* and its German counterpart(s) *Terminologielehre* and *Terminologiewissenschaft*. We explore them in order to reflect on some further dilemmas in terms of (experiential) social reality, namely the idea of *conventions* (previously termed "norms and values") and their traces in *stereotype* concepts.

We will seek to extract a plausible subset of those components of *thick concepts* which are *stereotypes* and which can be considered "action-guiding" in that they activate *conventions*. With regard to these entities, we will build up a granular model for this purpose, based on the anthropological definition of culture presented in the last chapter.

The precondition for this is of course the introduction of the concept of *stereotype* itself, which will be retrofitted for our descriptive purposes. This is primarily a matter of adding another possible mode of distinction to the well-established ones of "classical" and prototype theory. It will again flow from the the etymological/ experiential definition of *concept* as a "gathering" of mental material. The notion of *stereotype* will be used for adding a pragmatic understanding of *concept* to the philosophical one previously developed.

After further considerations on the development and use of *ideal types* and *stereotypes*, we will expand this concept theory further to also comprise an operational dimension. This is however the subject matter of the following Chapter (3). Here, the pragmatic dimension relates to such impressions of "social reality and context" as may be derived from the interaction with texts. Therefore, the "angle" of this chapter is perhaps closest to that of the sociology of science; we start off exploring the idea of *scientificity*, or the *property* which something must possess so that it appears as part of the scientific enterprise to a specific hypothetical audience of observers and commentators.

The by-product of this discussion will be a more differentiated working conception of culture, whereby we will see the necessity to elaborate on its aspect as something "segmented and multifaceted"; this will later give us the concept of *disciplinarity*, by which we account for the experiential fact that the variety of scientific sub-cultures (self-)organizes according to social rather than ontological criteria (H.E. Wigand, personal communication). Their categorization will also provide us with examples of *stereotype*. In terms of the practical problems to be tackled, we will look into the assumption that a concept theory should equally account for problems of (macroscopic) subject delimitation and (microscopic) concept description. These issues will however be addressed at a later stage, as will the accompanying dilemmas of *indeterminacy, contingency, stratification* and like procedural aspects of *disciplinarity*. In the present chapter, we will mainly analyze discursive evidence in terms of the "*prototypes*" of the "*stereotypical*" subcultures in question and attempt to induce the concept of *stereotype* itself.

2.1 Terminology research as discipline

Before this discussion can unfold in the manner described, it will be necessary to construct and present a case to provide a grounding for the discussion. As noted, we shall attempt to turn our

methodology back on its own subject of terminology research[1], which involves inducing general *heuristics* from analogical cases rather than comparing a large number of distinct formulation whose differences are quite minute. In other words, it requires a component of "analytical casuistry" (Antia et al., 2005).

We shall begin with a historical perspective on the emergence of terminology research and different characterizations of this field, which have given rise to different designations. As we have stated in the previous chapter, we agree with those who see terminology research as an autonomous field, albeit one that is unified in practical concerns rather than in *epistemic interest* (which diverges on an individual basis) or theoretical paradigm (which, if anything, diverges on the sub-sub-cultural level, as will be seen). This idea itself is not new and has been expressed elsewhere (Cabré, 2003, p. 182).

At first, we approach the problem of field's identity and its designation from a *diachronic* or historical angle. Historically, the idea of the study of special languages, especially for didactic purposes, can be traced to the "Handelshochschulen" (Ger., approximately the *business school departments of universities* or *commercial colleges*) which appeared in German- and Dutch-speaking countries after the end of World War I and as a consequence of increased economic specialization and export-oriented activities (Picht and Draskau, 1985, 26ff.). Its most immediate consequence was the emergence of *Wirtschaftslinguistik* (approximately *specialized linguistics* or *business linguistics*) as a field of study which pursued to train pure and applied economists in the dominant languages of international commerce (Picht, 1998, p. 336). It was in these business-oriented or commercial contexts that the outline of *terminology research* began to be forged, not only by E. Wüster but also by other pioneers such as Alfred Schlomann in Germany (Schlomann-Lowe and Wright, 2006, p. 157) and D.S. Lotte in the Soviet Union (Picht and Oeser, 1998, p. 344).

The study of terminology as it was conceived at the time of its inception was primarily interested in the system of specialized concepts denoted by a semi-formal system of specialized lexical units, then seen in isolation from wider linguistic issues and the history of ideas (i.e. following a strict *synchronic* principle). It is this conception that is commonly attributed to the Austrian engineer and businessman Eugen Wüster (Picht and Draskau, 1985, 26ff. Temmerman, 2000, Ch. 1, Temmerman, 1997, Temmerman, 1998, Smith, Ceusters, and Temmerman, 2005, Cabré, 2003, 165 ff.), who formulated its theoretic-methodological outline first in his doctoral dissertation titled "*Internationale Sprachnormung in der Technik, besonders in der Elektrotechnik*" (translation: "*International linguistic standardization in the field of technology, with special emphasis on the field of electrical engineering*", Picht and Draskau, 1985, 28/29, their translation) in 1931, and later refined it through practical experiment while working on the multilingual technical dictionary "*The machine tool. An interlingual technical dictionary of basic concepts*" in 1968 (Cabré, 2003, p. 165). In doing so, he pursued – besides the explicitly practical goal of advancing the international standardization of specialists designations – to bestow upon his set of prescribed methods the "status of a science", and the nature of a "discipline for all practical purposes" (ibid.). This approach is commonly called a (or rather the) *General Theory of*

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[1]Similar to the early cyberneticists who explored self-reference in the idea of "second-order cybernetics", (Foerster, 2003a). As will be shown later, there are further ways to apply this "regenerative" principle to problems which are relevant in this thesis: the writing of records in *philosophical terminography* and the building of corpora. For now, we restrict ourselves to using the principle of self-reference for "paradigm analysis".

Terminology[2]. The original German designation given to this discipline and its system of methods was "*Terminologielehre*" (not "*Terminologiewissenschaft*", which only began to appear later, presumably *after* the coinage of the controversial English term).

In the following, we shall attempt to explore a range of the source culture's denotative and connotative meanings by means of a *componential analysis* conducted on the German source term and its English loan translation(s). This discussion will then be linked to some corpus evidence for each extant expression. In the wake of this phenomenon, we shall begin our inquiry into questions of the role that *stereotypes* (in cultural, sub-cultural and sub-sub-cultural terms) might play in the concept formation processes of – especially – the so-called "soft" disciplines and how they should be accounted for by a flexible grounded concept theory in *philosophical terminography*.

2.2 Case: terminology science

So, is there a *terminology science*? This provocative question is both rhetorical and heuristic. We are not concerned with asking whether terminology research can or should be conducted using "scientific" methods, as the answer to this question and its justification fall to the particular theoretical terminologist. If one is given, it is likely to be answered in line with the idea of *scientificity* that prevails as part of their research philosophy and it will fit the methods that they choose to adopt. Rita Temmerman, for example, derived hers from the "epistemic anarchism" associated with P. Feyerabend (Temmerman, 2000, p. 57). Ours has its roots in the pragmatic idea of the constructivists (see Chapters (3), (4), (5)) that can be regarded as including and building on the former (Glasersfeld, 2009, and earlier).

Here, we will be quite *literally* concerned with investigating the emergence of the term *terminology science* and with providing some hypothesis about its emergence, spread, and (re-)entry – which took place contrary to what many of the above authors would have deemed possible – into the German-language terminological literature. This also says something about the *half-life* of terms in this discipline (1.3.2) and helps to place it in the domain of the human sciences. With regard to the justification of this, we might note that "one place to start [studies in human sciences terminology] is the discourse intended to define the terms labeling the domain itself" (Beaugrande, 1993, § 1.2).

This will lead us to an investigation of the concept of *stereotype* and a study of how different varieties of *stereotypes* might affect activities that are central to terminology management (or terminology work), i.e. the classification or categorization of both subjects and terms encountered in the context of these subjects. The term *terminology science* has apparently proven irksome enough to be subjected to lexical critique and concept analyses (e.g. Temmerman 1997; 1998; 2000; Sager 1994). It can be seen as denoting a value-laden construct – or *thick concept* – *if* one surmises that there "is" a concept of *terminology science* which is suggested by the term *terminology science*. Whether there is strictly a reason to suspect that there is a concept *terminology science* as distinct from that denoted here with *terminology research* is as far as possible to be clarified on the strength of the empirical data and the "thought experiments" which we have incorporated into our understanding of *concept analysis* (1).

The example also fits our further reflections insofar as the term denotes a field of study and

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[2]henceforth abbreviated *GTT*

is therefore a discipline name or label. Since a field must be assumed to possess some form of "socio-syntagmatic" organization of its discourse, it is technically fit for a formal analysis of the sort that quantifies publications and documents together with their relations (another will be provided in Chapter (6)). However, in the case of a field designation or discipline name, the choice of "label" would also be influenced by some form of value judgment which would *connote* the term. This *connotation* should be accessible through a less exhaustive data collection, which would especially comprise critical receptions, discussions, and usage examples.

Such value judgments – analogous to the *positivism vs. interpretivism* debate as applied to terminology research – would be judgments of what constitutes good research practice and therefore – by extension – a desirable research philosophy, or the quality of *scientificity*. Reactions to them should be pronounced and their study should permit hypotheses about how researchers conceptualize their field: if denoting the field of terminology research with the term *terminology science* reflects "preferences for obtaining certain types of insights" according to Weber (2004, cited in last chapter) and therefore a *paradigmatic* research philosophy, then the debate surrounding the designation should reflect this to some degree[3].

However, further adjustments need to be made with regard to the linguistic and cultural norms – or rather *conventions* (as expressed in *thick concepts*) – that influence *primary* and *secondary term formation*. Distinguishing the one from the other is difficult in a multilingual context and this observation can account for the conjectural status of the present investigation. We believe that the theory of *stereotypes* provides a viable frame for thinking about a part of the problem.

However, let us first recount the narrative of the term *terminology science* in the English language discourse of terminology research as we reconstruct it. The term *terminology science* is a formation which exists in the English special language of terminology research and has even had the status of a standardized term at one time (compare Sager 1994, below). However, it has been ill-accepted and contested ever since it first appeared in this stream of discourse, which was presumably at some time during the 1970s [4]:

> The term terminology science is used by some authors to designate the scholarly study of concepts and terms found in special language, but there is strong resistance in English to *humanities-related compounds* using the word *science, which is widely construed in English to be limited to the* **so-called hard sciences**.
> Wright and Budin, 1997, 327, my emphasis

As the activity and field in the sense so denoted is widely seen to have sprung up in Vienna, Austria and in German language publications (see the above), it can be assumed that *terminology science* in English presents a case of *secondary term formation*. This "follows the precedent of an existent term with its own motivation" (Sager, 1990, p. 80) and tends to occur e.g. in specialized translation, as was presumably the case here.

As such, it would appear to follow the particular precedent of *science of translation*, a term that has first been coined by Eugene Nida in 1964 and which is a native (North American) English

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[3]Even one doesn't accept this as it stands, a lot can still be learned about the structure and conventions of a discipline by studying its discursive output with regard to how it deals with contentious issues; compare Hunston (1993).

[4]Temmerman (2000: 2) attributes it to Felber and his "Terminology Manual" published by Infoterm in 1984; this, however, appears somewhat uncertain. A search on Google Books reveals that the earliest appearance in terms of their document holdings can be dated to 1974 and the publication "The new librarianship, a challenge for a change" by Paul Wasserman. Ultimately, the question of its origin cannot be definitely answered with the means at our disposal.

formation that has been coined on purpose to convey a "number of theoretical assumptions and methodological overtones" which were opposed to the conception of translation as a "mere art" (Cowie and Shuttleworth, 1997, science of translation); the term can be seen as a homonym and further denotes another discrete concept, i.e. is a school of translation studies (Gentzler, 2001, p. 59; ibid.) which suggests striking similarity to our case[5].

In contrast to the case of *terminology science*, however, it can be assumed that in the case of the *primary formation* – which is always under the immediate control of the author – there was a clear intent to irritate and make a statement for a specific perspective on translation by coining and propagating the term. While the precise intent of the secondary term creator responsible for *terminology science* remains lost to us, we shall in the following treat the formation *as if* it were motivated and seek the *implicit* motive in the reflections on the concept of *stereotype*.

2.3 Componential analysis

At first, we shall conduct an *componential analysis* of the polylexical term pair *terminology science/ Terminologiewissenschaft* by breaking the compounds up and then surveying a reasonable number of *paradigmatic* facets, or senses, for each. In principle, *componential analysis* is a method for "reducing a word's meaning to its ultimate contrastive elements", traditionally used in lexicography and semantics (Yong and Peng, 2007, p. 49). It has found some application for the specific motivations of sociocognitive terminology on the *semasiological* level, e.g. the analysis of prototype-structured categories (Temmerman, 1998, p. 87), and is taken to be the preferred principle of traditional terminology on the *onomasiological* level (ibid, 84), where its application or interpretation amounts to a graphical concept representation in conjunction with logical definition practices. A *componential analysis* on the *semasiological/ syntagmatic* level ("lexical problem solving approach") has, on the other hand, been discouraged as method for technical translation because it yields unreliable results (Wright, 2001, 495 ff.).

In the spirit of our previous methodological reflections ((1.3.1) and (1.4.1)), our method of analysis will combine both elements with a dynamic perspective of cross-evaluation. It may be characterized as "thought experiment" or philosophical *paradigmatic analysis* (1.2.3.1) with a contrastive linguistic component and an intercultural descriptive interest.

2.3.1 Reconstructing the calque

In order to reverse-engineer the *de facto* rendering and speculate on its motivation, we shall first turn to the lexical features of the German (source language) term *Terminologielehre*, which we hypothesize by means of lexical *componential analysis* ("*Terminologie*" + "*Lehre*", compounded into a monolexical item as it is possible in German grammar); further assumptions include a *decontextualized* reading (*paradigmatic analysis*), which would give us the following hypothetical choices for calquing an English translation equivalent for the source language term. These alternatives are here given in an ascending order, from most general to most specific:

- principles of terminology

- methods of terminology

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[5]Imputing an identical motivation, however, would exceed the stated scope of this exercise and is unwarranted given the state of data in this regard. There is no evidence for this other than the application of the *stereotypes* to make cases commensurable, a practice on which we are reflecting here.

- doctrine of terminology

- theory of terminology

- science of terminology

- any abbreviated or permuted form of the above

As can be seen, the translation experiment yields a number of compounds which might be subjected to *componential analysis* and deconstructed in terms of the meaning facets of the particular term members. In order to make the following as intersubjective as possible, intuitive statements will now – where possible – compared against dictionary-derived interpretations (which indicates the shift of *attention* towards the *strictly syntagmatic* side).

2.3.2 Component 1: Terminologie

The first component is (Ger.) *Terminologie* (En. *terminology*), which as the nucleus of the term is generally used in terminology-related discourse to refer to any of the processes and entities below. The following encyclopedic definition[6] was written by explicitating tacit knowledge and should agree with, or at least not contradict, most that can be elicited from experts on terminology in either culture. Terminology – considered as a *homonym* – denotes:

1. The sum total of semiotic sign units with specific meaning (that is units denoting/ representing an element of specialized conceptual knowledge) in use within the context of a clearly delimited or delimitable field of human endeavor (scientific, artistic, economic and so forth); the vocabulary of a specialized field, used by subject experts/ specialists who form a discourse community for the purpose of communication inside and outside of that community and hence a special lexis seen as apart from that of the general, universally comprehensible language employed by a natural language community; this is *the* terminology proper, defined in relation to its field of origin; it is both the object of study in terminology research as well as its primary source of data.

2. The systematic practice of selecting, collecting, recording, describing, compiling, disseminating and sometimes controlling/ standardizing these units for the purpose of creating *a* terminology, or terminological product. These products/ artifacts are almost always crafted so as to comply with some pre-specified purpose, which can include serving the specific knowledge-acquisition, -formulation, translation (if multilingual terminology is involved) and control-related (i.e. standardization/ language planning) needs of humans or the classification/ parsing needs of non-human users (software agents). Depending on the stated purpose and the intended user, they can take the form of physical specialized dictionaries, glossaries, taxonomies, terminology standards etc. or of databases in the widest sense, which come in the guise of terminological data bases, knowledge bases, dictionaries and ontologies and often display a high level of plasticity, which allows their content to be transformed from one form to another, and ultimately into physical artifacts;

3. this practical activity is variously named terminography, terminology management, terminology work or specialized lexicography (whereby the identity is contested) and is informed

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[6]It is based on: Neubauer, 2008, further references ibid.

by a contingent system of ideas, methods and assumptions as to why, how and where and for what purpose to perform these activities, which is

4. The theory of terminology, characterized as an activity concerned with the formulation of methodologies, principles and guidelines for activity (3); it is this activity that our chapter shall focus on; an alternative designation for this is terminology science, the term that we will treat from a translational, historical and philosophical perspective in the following; furthermore, it is the latter that is often used interchangeably or in close conjunction with our fifth and final sense:

5. The discrete field of object-bound (if one is inclined to take this view) specialization which terminology itself occupies among other domains of specialized/ academic and scientific knowledge and which provides the context for activities (3) and (4) as well as for the processing/ streaming of raw data (1) into products (2). Since it can be assumed that the object of any organized and discrete discipline would be stated when its theory is formed, this can be seen as largely dependent on the existence of a theoretical activity (2).

That this component of the compound should not pose excessive difficulty in interpretation – apart perhaps from the polysemy "automatically" disambiguated by the respective co-text – may be due to the fact that it presents a loan formation from the Latin, which might be considered "culture-neutral" in a very restricted Western context. Etymologically, it has a comparatively long history of use:

> **terminology**, *n.* 1801, borrowed from German *Terminologie* (Medieval Latin *terminus* word, expression + German *-ologie* -ology).
> Barnhard, 1995

It can therefore be assumed that the term has been in circulation for over 210 years (albeit not in all the senses above) and has therefore merged into the general vocabulary. We can conjecture that this is the "thin" or *technical* half of the compound term which primarily evokes its *denotation*. Any semantic variance that accompanied the coining a secondary term in another language – English in this case – is likely to stem from the second member or determinant of the compound.

2.3.3 Component 2: Lehre

We can state that the component responsible for the *indeterminacy* or ambiguity in the source language formation seems to be the determinant (Ger.) *Lehre*. To make this argument, we need to elaborate on its culture-bound connotations. For this purpose, we have translated the senses in the entry for "Lehre" found in a 1978 edition of the *Duden* dictionary (Duden Contributors, 1978) – which falls approximately into the time-frame of the term's first appearance. According to the standard monolingual work of reference for German, *Lehre* suggests:

1. Zeit der fachlichen Ausbildung für einen bestimmten handwerklichen Beruf; Lehrzeit *[Time spent training for a specific manual vocation; The period of time assigned to this]*;

2. Ø *[Ideology or academic theory = explanation]*

a) gesamter Inhalt eines einer Weltanschauung, eines Gedanken- oder Glaubenssystems [*whole/ unified body of ideas comprising a weltanschauung or worldview, a school of thought or an ideology*];

b) in einem System von wissenschaftlichen Lehrsätzen zusammenhängend Gelehrtes; Lehrmeinung; [*Consistent/ self-contained system of scientific propositions/ statements employed in teaching; expert opinion which is taught*]

3. Ø [*Life experience and common sense = observation*]

a) Erfahrung, die man auf Grund bestimmter Vorfälle macht und aus der man lernt, lernen kann [*actual or potential personally formative experience*]

b) für bestimmte Fälle gegebene, durch Lebensweisheit aufgestellte Verhaltensregel [*commonsensical and/ or traditional rule-of-thumb*].

Here, we are obviously dealing with a member in the term that is culture-bound in the sense that it is derived from a specific contingent everyday social reality, which in turn follows from a historical development. *Lehre*, decomposed semantically into its "ultimate contrastive" facets or senses seems associated with a *thick concept* not so much because it denotes an incomprehensible indigenous concept (*thick concepts* occur less in "modern" societies, Levering, (1.1.1.2)) but because of the *combination* of impressions – in particular, the association with a system of vocational training that is *particular* to some German-speaking societies – seems to create an experience that *bundles* practical learning and the acceptance of "world-views" devolved from "authorities".

With reference to the historical view, this might explain why and how terminology research started out with the twin, somewhat incongruent aspirations of becoming a field with the "status of a science" and simultaneously a "discipline for all practical purposes" (Cabré, above). No matter which translation equivalent is added, the newly coined compound term *will* become subject to different interpretations, which should leave traces in the co-texts in which the translation equivalents are embedded. This makes it possible to follow the debate by evaluating corpus data.

2.3.4 Corpus data

The following bilingual examples have been collected from a variety of texts of the terminological literature. They have been parsed in order to ascertain that some of the (*paradigmatically*) possible terms are actually in use. Furthermore, it should be ascertained that the terms – when they appear – do make reference to the subject matter in question. This survey revealed that the German term *Terminologiewissenschaft* – which would be the back-translation of *terminology science* – also features in a few of the examples. This might be seen as a function of *half-life* of terms and texts[7].

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[7]This is an interesting consideration because it goes *against* the view that terms become obsolete and disappear after a while: "The establishment of collection of terms should take into account the life cycle of individual terms: their coinage ('birth'), description ('growth'), currency ('maturity') and obsolesence [sic!] ('death')", Ahmad, 1996b. An alternative view would be that the life-cycle *recommences* at the point of *secondary term formation*. This can also be seen as argument for the incommensurability of social and linguistic realities assumed by some terminologists (Arntz, 1993).

2.3.4.1 Selection of corpus examples

The examples themselves have been sampled at random. Specimens that contain *defining context* ("a defining context contains descriptors in sufficient quantity and quality to convey a very clear image of the concept covered by the term", Dubuc and Lauriston, 1997, p. 83) have been given preference. German samples have also been translated, whereby special indeterminacies have been highlighted. Examples are presented in chronological order. The *synchronic* slice they represent covers a diameter of about 21 years, judging by the date of publication, not of writing.

2.3.4.1.1 Terminologielehre

(2.1) *"Der Unterschied zwischen der Allgemeinen Terminologielehre und der Wissenschaft von der Gemeinsprache entspringen aus der verschiedenen Grundeinstellung zum Sprachzustand und zur Sprachentwicklung"* [Translation: *The difference that exists between the general theory of terminology and the* **science of general language linguistics** *can be explained from their different basic attitudes towards the (present) state and development of (a) language.*] Wüster (1985, p. 1)

(2.2) "*Terminologielehre analysiert die Entwicklung von Terminologien (Fachwortschätze) und stellt die Grundlagen für ihre systematische Weiterentwicklung zur Verfügung*" [Translation: *The theory of terminology analyzes the development of terminologies (specialized vocabularies) and provides the foundations for their systematic (planned) development.*] Schmitz (1998, p. 78)

2.3.4.1.2 Terminologiewissenschaft

(2.3) "Eine Diskussion, die die Entwicklung Terminologiewissenschaft von Beginn an begleitet hat, betrifft die immer wieder postulierte und beschriebene Existenz verschiedener "Schulen der Terminologie"." [Translation: *A discussion of the existence of different schools of terminology, repeatedly claimed (by some authors), and their description has accompanied the development of terminology science from its inception.*] Oeser and Picht (1999, p. 2178)

(2.4) "Die Allgemeine Terminologielehre, deren Kern die terminologische Grundsatzlehre bildet, ist ein wichtiger Zweig der Terminologiewissenschaft und ein Fundament der Wissenslehre und Wissenstechnik." [Translation: *The General Theory of Terminology, whose core is the* ***Lehre (doctrine/teaching/theory?)** *of terminological foundations, is an important branch of terminology science and (one of the) the foundation of both the* ***Lehre (the doctrine/ study? of) knowledge/ epistemology(?)** *and (the practice of) (terminological) knowledge engineering.*] Felber (2001, p. 2)

2.3.4.1.3 Theory of terminology

(2.5) "Wüster (1898–1977) an engineer with a strong interest in information science, one-time active Esperantist, and fierce proponent of unambiguous professional communication, developed a theory of terminology on the basis of his terminographic experience in compiling *The Machine Tool. An interlingual Dictionary of Basic Concepts* (Wüster

1968), a systematically arranged French and English dictionary of standardised terms (with a German supplement) intended as a model for future technical dictionaries."
Cabré (2003, p. 165)

2.3.4.1.4 Terminology science

(2.6) "The term terminology science will be used here to refer to terminology science, a field of study of terms and concepts, rather than to collection of term [sic!] in a specialized field."
Nuopponen (1996)

(2.7) "A significant portion of research projects in terminology science should be aimed at the practical activities of knowledge presentation [sic!] and processing." Shelov and Leitchik (2006, p. 18)

2.3.4.2 Representation and interpretation of corpus samples

Besides proving that the formations suggested by the *paradigmatic analysis* have actual currency, this list of partly translated usage examples will also provide the reader with a further understanding of the (logical and encyclopedic) properties of the field and us with the grounding for some of the assumptions introduced later on. On the basis of the samples, it is also possible to prepare a diagram or *paradigmatic* "componential analysis" in the traditional sense:
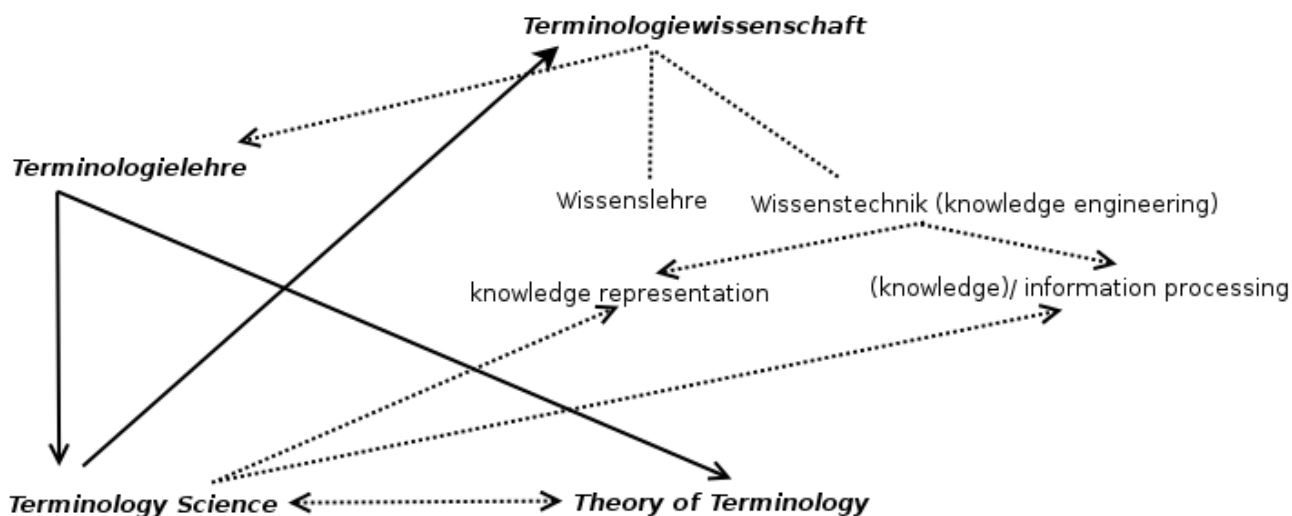
Figure 2.1: *Theory of terminology, terminology science, Terminologielehre* and *Terminologiewissenschaft* from an empirical perspective.

We have employed the encyclopedic and logical properties that occurred in the respective fragments or example sentences for the preparation of this figure. What is especially interesting here is the bifurcation of understandings over time; Example 2.1 and Example 2.2 only re-state the well-known methodological preferences of the *General Theory of Terminology* and its essential applied research interest, which is equated with the field label *terminology* (i.e. terminology research) – the first, undetermined term member. By contrast, Example 2.3 states that there are differing conceptions of the theory of terminology ("schools"), which would make the *GTT* a practice-oriented "body of teachings" as in the transliterated definition's senses of *Lehre*, (2a) and/ or (2b) and the competing forms *subordinates* of a larger field which the authors chose

to name by the German term *Terminologiewissenschaft* (lit. *terminology science*). Presumably, they intended to denote a larger field of study which could be construed as analogous to the **science** *of linguistics* (lit. *"**Wissenschaft** von der Gemeinsprache"*) that the *GTT* (and the other schools as well?) partially opposes in its tenets , as it can be read in Example 2.1.

In the diagram, we have represented this visually by placing *Terminologiewissenschaft* (a back-translation?) above *Terminologielehre*. We also indicated the supposed directionality – from German *Terminologielehre* to English *terminology science* to German *Terminologiewissenschaft* – as this is suggested by the apparent development over time.

Example 2.5 tells us that *Theory of Terminology* refers to the *GTT* as a practical heuristic – the sense suggested by the transliterated definition's description of Lehre, (3a) – with an addition of a connotation of received practice reminiscent of sense (1). This portrayal however proceeds in a qualified fashion ("*a* theory of terminology") that doesn't allow its identification with the entire field. This is generally consistent with Example 2.6, where the (Swedish-speaking) author says that (English) *terminology science* should be taken to denote the field of study – as in our definition of the nucleus *terminology*, senses (4) and (5) – to distinguish it from the phenomenon of *terminology*, as described in our definition of *terminology*, sense (1).

In the figure, this is represented by the bi-directional dashed arrow connecting the two English terms on a coordinate level.

In terms of extensional properties ascribed to the pair *Terminologiewissenschaft/ terminology science*, Example 2.4 tells us that *Terminologiewissenschaft* should be taken as the superordinate field comprising *terminological knowledge engineering (Wissenstechnik)* – a practice whose designation the author of the sentence has coined and which is well-known and established in the English discourse of terminology research (compare the TKE series of conferences; Budin, 2006) – and something termed *Wissenslehre,* which, in the particular context, is likely to indicate something akin to a *terminological theory of knowledge* [8] (Felber, 2001, Ch. 4).

This is represented using top-down dashed arrows connecting the indicated subfields to *terminology science*.

Further indications of extensional properties are brought out in Example 2.7, where the author (a speaker of Russian) suggests that *"knowledge [re]presentation"* and *"processing"* should be taken to constitute fields of inquiry for *terminology science.* This is easily brought to align with Example 2.4, which however suggest a similar point of view from a "bottom up" (or inductive) perspective. This observation is represented accordingly, with dashed arrows pointing *upwards* from terminology science to *knowledge representation* and *information processing.*

2.3.5 Summary of concept analysis, interpretation

By way of combining translation heuristics, *componential analysis, interactive concept analysis* and random corpus sampling with concept representation, we have eliminated unlikely constructs – e.g. *principles* and *methods of terminology*, both of which are too indeterminate to yield usable results, and *doctrine of terminology*, which is unlikely to used by anyone as a positive characterization – and devised a rough sketch of the supposed concept of *terminology science* in

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[8] *Epistemology* would not be an acceptable translation, as this would sub-ordinate the entire *subfield of philosophy* to *terminology science*, a classificatory *coup d'etat* to which most scholars would likely object and for which there is no historical or textual basis (see philosophical classification, Chapter (6)). The German term *Wissenslehre* however suggests this usage. This can be taken as an *indeterminacy* in a multilingual terminology context.

conjunction with the concept of *theory of terminology*.

With regard to the former referent, we have used the "classical" approach of extracting logical properties from the running text, whereas the latter can be seen as having been approached by way of *prototype* theory. We have here tried to work out the exemplar that the specialized authors might have had in mind.

This interpretation of the method would be the one which is advocated by sociocognitive terminology (Temmerman, 2000, p. 61). Its view can be empirically justified by the observation that those corpus examples which do make reference to a typical member of the category of *theoretical terminologist* either make reference to the *person* (the exemplar) of Eugen Wüster (2.5) or tacitly assume that his theory (*GTT*) is indeed the *prototypical* one. In this case, other exemplars are shunted to the periphery of the category in that they are clarified by differentiation (Example 2.3) from the *prototype*. These findings are not intended to be representative; for this our sample size is too small and our selection lacks the appropriate rigor and depth. However, it seems to provide some backing for the methods we devised in Chapter (1) in that they show that these are practicable.

In this regard, the intention was to show that though the competing concept theories are in principle mutually complementary, either seems to have a "blind spot" for certain connotative or evocative factors of term coinage and use whose study should play a role if terminographic methods are to be applied to the purpose of constructing a *philosophical terminography* (Chapter (4)). The following will demonstrate what is missing, and suggest *stereotype* theory a possible approach to the issue.

2.4 Actual critique and reception of terminology science

This will become apparent if we look the reception of the term *terminology science* and, by implication, its German counterpart. Though logically and pragmatically perfectly justifiable in that the term indicates a field with further subdivisions and some variance in perspective and is less ambiguous than the nucleus *terminology* when used without an affix as monolexical discipline label, the formation has attracted negative evaluations on the account of its *connotation*.

The key work of criticism we address ourselves to is an article titled "*What's wrong with terminology science and terminology work*" by Juan Sager, which appeared in the journal *Terminology* in 1994[9].

Sager (1994) focused primarily on the suitability of the designation *terminology science* from a linguistic point of view and in terms of the English target language norms of *acceptability*. From this perspective, his contention was that the terms were *"neologisms that seemingly conform to English word formation rules but do not follow its usage"* and that they had been *"constructed by non-native English speakers by means of loan translation [...] in genuine belief that they fit English habits, but without full consideration of the precedents given in analogies and parallel formations* **which alone make new words acceptable to native English speakers**". Consequently, he attested an "*insensitivity to existing precedents and traditions*" and – after reviewing parallel German language precedents and motivations in primary term formation – the factors that have led to the terms *terminology science* and *terminology work* gaining "*the dubious status of*

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[9]Note that this article precedes the first articulate dissent about the underlying research philosophy proper by about a year. Perhaps the discussion of designations has spurred some thought about the content which is represented? Even in recent times, it has attracted commentary (Rogers and Wright, 2006).

international ISO terminology". His observations ultimately conclude in the verdict that the two designations were *"alien, illiterate, and awkward, add[ed] nothing to make the technical vocabulary of the field more precise or concise and [... were] therefore unnecessary"*.

The possible emergence of the German term *Terminologiewissenschaft* was categorically precluded in Sager's argumentation as it would violate the source language conventions as he saw them:

> It is also interesting to note that Wüster, despite many German precedents of compounds with *-wissenschaft*, did not create such an *obvious tautologous barbarism as Terminologiewissenschaft* because he knew that it runs counter to German traditions of word formation for classical derivations in *-logie*.
> Sager, 1994, p. 376

Although this seems plausible, we know now that this term not only exists in written discourse, but was – and perhaps is – used by native speakers of German who apparently do not seem to share this conviction, besides being accredited academic terminologists, philosophers and researchers.

While the use of the German term *Wissenschaft* for a more or less literary field of study does not seem to raise awareness or resistance in the German-speaking countries, "strong resistance in English to humanities-related compounds using the word science" – as it is admitted in another example fragment – seems to have been quite manifest and to have lead to a serious "real world" consequence; in this case, it consisted in the British Standards Institution withdrawing from the ISO committee responsible for promoting the offending term pair (ibid, p. 380).

The lexeme *science* therefore seems to both denote and connote a *thick concept* in the anthropological sense – one that "you apparently *cannot* use if you are not local" (Levering, cited in (1.1.1.2)); this can perhaps be understood in the literal as well as the figurative sense of the spatial metaphor.

Such understanding seems to remain of interest when regional approaches to *terminology* are discussed from a contrastive or comparative perspective (Budin, 2006; Rogers and Wright, 2006). Here, an analysis of the possible motivations of term formation might be used as a *heuristic* for unlocking the *epistemic interests* of social groups like *cultures*, *subcultures* and *sub-sub-cultures* (i.e. smaller groups within wider cultures) of researchers, as it was suggested by Weber (cited in last chapter). The persistence of both the terms and these supposed interests can be seen as either indicative of the *conventions* regarding textual *half-life*, the cognitive role of (social) *stereotypes*, or both. However, what exactly is a *stereotype*?

2.5 The concept of stereotype

The homonym *stereotype* has a number of specialized *and* general senses which can differ widely in their denotations and connotations. In the following, we review facets of the concept that can be found in general understanding, the social sciences, cognitive science and linguistics in order to build up an *operational concept* that can be used in theoretical terminology and *philosophical terminography*. This will later be complemented with a finer-grained taxonomy of *syntagmatic* and *paradigmatic stereotypes* which is modeled on a precedent of application in translation studies that has been recalibrated for our purposes.

2.5.1 Stereotypes in general understanding

The term *stereotype* will – as far as this thesis is concerned – be the first in a series of specialized interdisciplinary homonyms to be adapted for instrumental and operational use. Here we begin with the understanding of general language, where *stereotype* is tantamount to "prejudice":

> S: (n) stereotype (a *conventional* or formulaic conception or image)
> "regional stereotypes have been part of America since its founding"
> Wordnet Contributors, 2010

As "conventional" and "formulaic images" that seem to bypass conscious ratiocination are a common phenomenon, *stereotypes* in this sense have a history of use in sociology, translation studies, corpus linguistics and cognitive science, but – to the best of our knowledge – not yet in terminology. This is remarkable insofar as, as the case elaborated above demonstrates, the *stereotype* is a type of mental construct that could be characterized as a concept. Where stereotypes *function* as concepts, they seem to be used for *classifying* a collection of arguably widely different objects and people, as the definition of the English verb *to stereotype* suggests:

> S: (v) pigeonhole, stereotype, stamp (treat or *classify* according to a *mental stereotype*)
> "I was stereotyped as a lazy Southern European"
> ibid.

Stereotyping in this general language sense has a deservedly negative connotation and it is likely difficult to admit to oneself that one is in fact doing it. For this reason, *social stereotypes* often seem to become apparent only *after* they have already become unacceptable, at a time when the level of "stereotype awareness" will have risen and the avoidance of a specific *stereotype* will have become a *convention* in and of itself. Note, for example, the sexist and/ or classist depiction of some "typical" people found in a 1960s-era popular textbook on computer science. The illustration has been extracted and is represented in Figure 2.2 on page 57.

This figure imputes that if confronted with a full homonym, people will be prompted to think of what appears most likely, given their appearance, occupation, and – unfortunately – social status, gender and ethnicity.

2.5.2 Stereotypes in social science

It is not surprising that a more specialized understanding developed from the "folk sociology" expressed in the preceding linguistic and pictorial examples. Given the fact that *stereotyping* can be observed in everyday discourse, a systematic study of the phenomenon was bound to emerge. The sociological concept of *stereotype* essentially encapsulates the "folk" interpretation of *stereotype as prejudice* and additionally identifies a mental and functional component:

> In sociology the *concept* of *prejudice* refers broadly to *systematic and durable subjective assessments of groups, or members of those groups, in unfavorable terms.* [...] Research following on from the pioneering work of Harvard social psychologist Gordon Allport (1897–1967) has suggested that prejudice *is not only the result of psychopathology but also results from much more routine and pervasive learning processes.* [...] According to Allport, *the human mind cannot dispense with what he called categorical thinking*, and what is now more commonly known as *stereotypical thinking*, because *it is the function of the mind to simplify and systematize the diverse*

sensory and cognitive inputs to which it is exposed. Were it not to do so, we would be hopelessly ill-equipped to act in the world.
　　Weinberg, 2006, 470/471, my emphasis

This view presents a more ambivalent view of *stereotype*. *Stereotyping* is, on the one hand, characterized by classifying the referent of the stereotype (or prejudice) according to *negative* criteria and therefore to their detriment, as *stereotyping* results in "discrimination and stigma" (ibid., p. 470). With reference to our Figure 2.2, this sort of *stereotype* can be seen as expressed in the illustrator's choice of presenting the woman character as interpreting *mass* as a generic term for dough rather than, say, the concept of *mass* in physics, or in any of the other ways depicted. This expresses – in our interpretation – a notable level of *gender prejudice*.

However, if we follow Allport's insight that "stereotypical thinking" is a form of "*categorical thinking*" – or what is more commonly called *categorization* – which is the result of "routine and pervasive learning processes", we could also arrive at a different interpretation. If we drop the condition that the *stereotype* entail a generalized *negative* judgment about other individuals and groups, we move closer to the *categorization* view of stereotype. This would then account for a "second-order stereotype" also depicted in the pictogram – namely the images that appear in the thought bubbles over the character's heads. In this case, we focus on the observation that the illustration's characters are assumed to have a "snap" association with a decontextualized word *at all*, and therefore on the *associative function* of *stereotype*:

> The circle of two-way connections linking concepts, sound-images, and re-presentations makes possible that each can be called up by both others. If I now present you with a *word that is totally out of context*, e.g., rhinoceros[,] you may not know what to do with it, but if I asked you what it means, you could certainly give an answer. You might say that it is a dangerous beast, has a notorious horn, and lives in Africa. You could say this, because the *word called forth a visual re-presentation formed from pictures you have seen*, from an experience on a safari, or from a visit to the zoo. It might also call forth all sorts of other things – a play by Ionesco, a particularly boorish person at your office, or *whatever else you happen to have associated with the word*. This *wider range of associations (sometimes referred to as 'connotation')* is what poetry relies on. Here, however, I am interested in the *primary association, between the word and the animal as an experience*. There may be *words, and there are certainly names, that call forth a representation that was not formed from actual experience but vicariously from a description*.
> 　　Glasersfeld, 1995, 132/133, my emphasis

So considered, the *association* expressed by the character's "thought bubbles" is a form of "primary association", since it links the linguistic sign presented to the characters with something the *creator of the pictogram* imagined to be their most "likely" association. This in turn would have derived from the illustrator's own *stereotype*, or "secondary association" – which was perhaps a "vicariously" acquired *stereotype* of the type that have we previously commented on. Evaluating thought experiments like this with view to *denotation* ("primary association") and *connotation* ("secondary association") can yield further facets of the concept of *stereotype* and therefore contribute to a working model of *stereotypes as concepts*.

2.5.3 Stereotype in cognitive science

A distinction of stereotypical categorizations along the lines of "primary" (i.e. immediately acquired) and "secondary" (i.e. indirectly or vicariously acquired) *stereotypical associations* is

perhaps the most basic feature of the variant of the *stereotype* concept one can find in the cognitive sciences. One such distinction entails distinguishing "psychodynamic, sociocultural and cognitive" perspectives on *stereotyping*, "the process by which people use social categories (e.g., race, sex) in *acquiring*, *processing*, and *recalling information about others*" (Dovidio, 1999, p. 804). This process likely also extends to recalling information about impersonal objects and/ or signs that are only indirectly or vicariously associated with this sort of information. If this should be so, the idea of *stereotyping* can be enlisted to explain the *connotation* of lexical items. What the cognitive perspectives on *stereotype* seem to have in common is that they believe *stereotyping* to be functional, i.e. that it aids persons in categorical thought. This facet of *stereotype* orients us away from the problem sphere of the sociological understanding and towards a more general understanding of *stereotypes* as mental constructs:

> All of these perspectives view stereotyping as *functional* (Dovidio et al. 1996). Early accounts of stereotyping, influenced substantially by the psychodynamic approach, generally represented this process as *functional but flawed*. On the one hand, stereotyping was assumed to help *manage the complexity of one's environment by simplifying the social world* [...]. On the other hand, stereotyping was considered a *faulty process because* (1) it was a **rigid form** *of thinking that was highly* **resistant to change**, and (2) it produced **overgeneralizations** *that unfairly emphasized the influence of inborn and unalterable psychological characteristics relative to social or environmental influences.* [...] Once established, **stereotypes operate as cognitive structures** that influence how others are perceived and how information about others is stored and retrieved. These **stereotyping processes operate in unconscious and unintentional ways**, as well as consciously (Greenwald and Banaji 1995). [...] When *stereotypes are activated, people are judged in terms of the group's standards.* [...] People also develop expectations about others substantially on the basis of their group membership and the associated stereotypes, although this *effect may be undermined by providing information about the unique characteristics of a person* (Fiske 1998).
> Dovidio, 1999, 804/805, my emphasis

Both the social and cognitive perspectives however stress the explanation of *stereotypical categorizations* in the individual and the collective without specific reference to the *syntagmatic forms* of language use, or *discourse* – here understood as the "modes of speaking and writing which involve *participants* in *adopting a particular attitude towards areas of socio-cultural activity*", Hatim and Mason, 1990, 240, my emphasis. The relevance of *stereotype understanding* in the practice of *discourse analysis* should be clear. If the concept of *stereotype* should be mobilized for the use of terminology research, we may want to examine model cases where this understanding is coherently embedded in a model of the *interaction* between "world, mind, and language" (Rita Temmerman, (1.4.4)) – or, from a practical and field-specific vantage point – the interaction between mind and language, as we envisaged it. The two-way interaction of mind and world – and others in the world, in the case of the social sciences – can for our purposes largely be subsumed in the construct of the *sociological imagination*, which will later be revised and further developed.

2.5.4 Stereotype in translation studies and linguistics

A starting point with regard to developing a *syntagmatic* understanding of *stereotype* is here provided by one understanding elaborated in the context of translation studies. This is the

application of stereotype theory developed by Zybatow (2002). Like Dovidio (1999) and Scholl (2010), Zybatow (2002, p. 72) derived his *stereotype* concept from Walter Lippmann's idea and accordingly defined *stereotypes* as "cognitive schemata or stable conceptual structures which help us see and interpret the world". This tendency places the interpretation in the vicinity of the cognitive view. From the basic concept, a further distinction of *cognitive* (Ger. *Denkstereotyp*) from *linguistic stereotypes* (Ger. *Sprachstereotyp*) is derived and the *linguistic stereotypes* in particular are further subdivided in terms of a deeper taxonomy, which we have extracted and represented in Figure 2.3. The English translation of the legend reads, from the top left to bottom right: *stereotype, cognitive stereotype, linguistic stereotype, word-related stereotype, text-related stereotype, interpretative stereotype, image-schematic stereotype, associative stereotype, semantic stereotype, language game, conceptual metaphor, expectations, attribution of properties.*
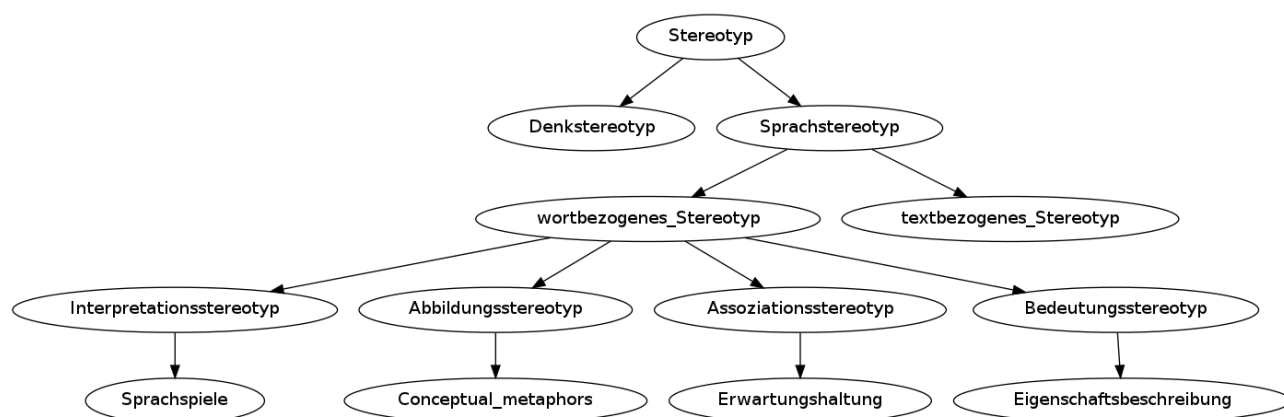
Figure 2.3: Taxonomy of translation-relevant stereotypes according to Zybatow (2002).

This chart is mainly included to highlight an exemplary application and provide an initial orientation. Taxonomies of this sort can of course be criticized on the grounds that they compromise *thick description* by "uncoup[ling] phenomena from their context, thereby sacrificing interpretative richness" (Smithson, 2008, p. 211), but here its function is – as noted – to serve as a basic formulation rather than a ready-made explanatory model.

2.5.5 Recalibrated taxonomy of relevant stereotypes

After some adjustments, it should help draw the outline for categorizing three relevant stereotypes – applicable to the dimensions of *culture, sub-culture* and *sub-sub-culture* – for the following discussion. According to this threefold model – which will be tested and justified by appropriate case data once the other components of the framework of *philosophical terminography* are in place – we could recalibrate the above taxonomy for our purposes. This recalibration proceeds by expanding and reordering the relevant types.

2.5.5.1 Discourse-specific stereotype

The first adjustment concerns the distinction of *cognitive* and *linguistic stereotype per se*. It needs to be revised not only in terms of the *paradigmatic* and *syntagmatic* as imaginary "anchors" for *attention* (1.4.2) but also against the view of specialized writing that sees *epistemic writing* as a process that dissolves cognition and discourse production into *one* reflective process in which "thinking and writing become indistinguishable" (Budin, 1996b, p. 93). While one rarely finds

this idea spelled out to the fullest, it is central to the understanding of the notions that describe enculturation at the gestalt-like *worldview* level ((8.1) ff.) – and where the broadest exemplary application of the *stereotype* concept can be situated – as well for our understanding of the practice of *philosophical terminography* ((4), (5)) in general.

Specifically, we subsume the *text-related stereotype*, defined as "stereotype which forms the background knowledge for the interpretation of texts and is constituted by the system of norms and values that prevails in a linguistic and cultural community" (Zybatow, 2002, 76, my translation) under the category of *cognitive stereotype*. This is done for the simple reason that we regard such background knowledge to be a part of the recipient rather than one of the text. We will henceforth refer to this construct by using the term *discursive stereotype,* on the strength of the observed close fit between concept- and discourse analysis (1.2.3) in the context of *interactive concept analysis.*

However, it is worthy of explanation that we first distinguish *discursive stereotypes* from *subject stereotypes* on the grounds that the former seem to be associated with the idea of *genres* ("conventional forms of texts associated with particular types of social occasion", Hatim and Mason, 1990, p. 241) as general, abstract types rather with *specific instances of generic text*, the meaning we would read into the latter term.

Secondly, it seems opportune to combine the *word-related stereotypes* into two clusters under the auspices of their application for either subject- or term classification. This is a distinction which will be further developed in the appropriate place (6). Of course, these further *stereotypes* cannot be meaningfully separated from the *discursive stereotype* in contexts other than pedagogical thought experiments and are in some sense entailed by them.

2.5.5.2 Subject-specific stereotype

The *stereotypes* that are most relevant for subject delimitation are what Zybatow called the *image-schematic stereotype* and the *associative stereotype*[10]. The first denotes a generic term that subsumes the experiential realist and/ or cognitive semantic concepts of *conceptual metaphor* (Lakoff and Johnson, 2003, pp. 4/5) and *image-schematic model*[11](Lakoff, 1987, pp. 113/114). It describes "relatively constant metaphorical models [used] to map culturally relevant facts [onto metaphorical domains; PBN] in a systematic fashion" or the "basic metaphors that characterize stereotypical perspectives" (Zybatow, 2002, 75/76, my translation). *Image-schematic stereotypes* can therefore be seen as expressing a routine or cliché metaphoric so entrenched that it has come to be employed by a larger culture. Given this breath, they can be regarded as a feature of both general and specialized language use or as characteristic of a specific sector of either.

The second term, *associative stereotype*, denotes "attributions of features or properties that are not constitutive of an exemplar's category membership but rather reflect what a culture considers a typical attribute of a given exemplar X" (Zybatow, 2002, 73, my translation). It can be seen as an instance of *social stereotype as prejudice* insofar as one allows that the precept in question *can* – but need not – be benign or neutral rather than explicitly negative. Transposed to a special language context, the use of *associative stereotypes* can sometimes merely identify a language

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[10]That this should be so follows from, e.g., Rita Temmerman's finding of discipline-specific metaphorical models; in the case of *associative stereotypes*, this assumption would be basic to the idea that terms develop different *conventional* interpretations which are specific to each disciplinary social context.

[11]Hence my coinage of the translation equivalent *image-schematic stereotype* for the German term *Abbildungsstereotyp*.

user as a member of a certain disciplinary culture. Consequently, the *associative stereotype* may be acquired unconsciously and routinely while language users are socialized into a specialized community. The presence of culture-specific *associative stereotypes* may therefore be of use to a corpus-driven view of subject classification. It is included in the cluster of *discourse-specific stereotypes* because stereotypical associations can be *characteristic* of a *discourse community*.

Both types are in principle recognized in sociocognitive terminology, although they are not seen under the *stereotype* aspect[12]. The idea of *image-schematic stereotype* is, due to the contingency of both ideas on cognitive semantics, implicit in the sociocognitive theory's strongest area – the study of metaphorical models (Temmerman, 2000, ch. 5). However, reflections on the *institutional culture* of the life sciences – which can be seen as *gestalt* of historical, social and technological influences (ibid., pp. 212-216) – can be seen as relatively subordinate to linguistic considerations in this context. They are, at any rate, difficult to transfer *immediately* to the domain of the social or human sciences (compare (6.2.2.2.2)).

In terms of the function of *associative stereotypes*, one could say that they feature in sociocognitive terminology as an aspect of the concept of *self-centeredness,* which is seen as a function of *subjectivity*. Temmerman notes the observation that:

> Defining texts are *self-centred*. The vantage point for seeing other categories is the category under definition itself. [...] It is noteworthy that the *reflective text fragments defining other disciplines show this same self-centredness*. *This leads to apparent contradictions*, e.g. recombinant DNA technology is *claimed as their invention by geneticists, molecular biologists, and biochemists*. A considerable degree of *subjectivity* has to be recognised.
> Temmerman, 2000, 51/52, my emphasis

Thus, it was observed that writers invested into the perspective of one discipline tended to judge knowledge claims, *epistemes*, *scientemes* etc. originating from another by their own group's standards[13] and thus fell back on *stereotypical* categorizations[14] for evaluating the claims. This way of looking at discursive data must be amplified significantly if the scope of sociocognitive terminology is to be expanded towards *philosophical terminography* or the study of the terminology of the social and human sciences in general.

The reason for this is that in the human sciences, and especially in philosophy, there are in many cases no material exemplars or *prototypes* in the strict sense. Instead, one finds only people's expectations of what things should be, regarded or understood as – and these are likely based on the observer's self-conception as it is embedded or situated in their own social perspective and then differentiated against the *stereotypes* of others[15]. What could be called

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[12]This is due to a scholastic debate that emanates from the philosophical basis of sociocognitive theory. Here, the *stereotype* theory in question is Putnam's. It is considered as partly incompatible with experiential realism: "Putnam's 1975 account of meaning is *objectivist* in most, but not quite all, ways. [...] His account also takes for granted the *independence of metaphysics from epistemology*, since his stereotypes (which are purely epistemological) may not determine *correct reference* or *truth*. Putnam does, however, take one important step away from objectivism, in that he does not assume objectivist cognition: his account of stereotypes does not require that the concepts we think in terms of correspond to entities and categories in the world" (Lakoff, 1987, 169, my emphasis). This example partly reflects stereotypical thought at the level of sub-sub-culture that is going to be portrayed in (8.3) and which represents a noteworthy phenomenon in its own right.

[13]In fact, the use and naming of various units of scientific reasoning – like those enumerated – can *itself* be seen to constitute the application of such standards, Budin, 1996b, pp. 22/23, Beaugrande, 1997d, ch. 2, § 30.

[14]Somewhat flippantly, one could say that the stereotype is the prototype of categorial thought.

[15]"The self arises in language in the linguistic recursion that brings forth the observer as an entity in the explanation of his or her operation in a domain of consensual distinctions. Self-consciousness arises in language in the liguistic [sic!] recursion that brings forth the distinction of the self as an entity in the explanation

personal prototypes (i.e. constructs representing people, like Eugen Wüster in the examples) seem to be mostly apprehended in a stereotypical frame, i.e. as representatives of a discipline, school or other social group defined in relation to the discourse producer's own, whereby their role or interest is explained – not necessarily incorrectly – by the person's occupation or stated interest.

The dearth of exemplars which exhibit observable features for comparison means that *stereotype constructs* – which could be thus understood as having fixed *outlines*, but no obvious *center* – will likely be a more productive source of material than the study of *prototypes* – which could be understood as the *centers* of the concentric "circles[16] of similarity" that make up the extension of a category and therefore could be understood as *centers* with no fixed *outlines* or boundaries (Rosch, 1978; for a representation, see e.g. Ferard, 2009, p. 110).

This should be particularly problematic in relation to determining the subject (i.e. culture) membership of a piece of discourse (the *text fragment*, (1.3)) and its component parts, including terms. *Discursive stereotypes* and *subject stereotypes* can both be construed as *paradigmatic stereotypes* that activate certain interpretations and communicative "reflexes" which are independent from specific formulations on either the level of the *genre* or the specific text. A third re-distinction and regrouping, by contrast, will yield the type of *stereotype* that is relevant to lexical units, and therefore the *terminological stereotypes*.

2.5.5.3 Term-specific stereotype

With regard to stereotypical constructs associated with the *terms* of specialized discourse, the third cluster of *stereotypes* is of interest. Under its umbrella, we subsume the remaining two types of Zybatow's taxonomy, the *semantic stereotype* and the *interpretative stereotype*. Considering that the *semantic stereotype* is defined as a category "containing all 'typical' properties which help language users differentiate [conceptual] contents against each other in everyday reasoning" and that *interpretative stereotypes* are "culture- and discourse-specific stereotypical interpretations of 'open' sociocultural concepts (after Wittgenstein) which refer to units that are *indeterminate*, like for example *love, liberty, democracy* [Ger. *'keine klar umgrenzten, eindeutig zu beschreibenden Einheiten'*]" (Zybatow, 2002, 73; 74; my translation and emphasis), we can note that these constructs are relatively difficult to delimit against the other types. With regard to these lexically instantiated *stereotypes*, two further considerations enter into the picture. The first is a linguistic component generally described under the umbrella of *stereotype semantics*, the other is the factor of *indeterminacy*, which has in recent times begun to receive increased attention in terminology research[17].

That *indeterminacy* should be considered a factor that is built into the constructions of both *prototype* and *stereotype* semantics becomes clear when we look at the following representation of the respective models:

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of the operation of the observer in the distinction of the self from other entities in a consensual domain of distinctions", Maturana, 1988.

[16]"The most radical prototype phenomena are radial categories. They cannot be represented by single model plus general principles. They involve many models organized around a center, with links to the center." Lakoff, 1987, p. 153

[17]"[O]ne hallmark of theoretical terminology research these past 50 years has been to draw attention to the pervasiveness of *indeterminacy*, a concept indexed by any or a combination of the following: *unpredictability, indefiniteness, vagueness, inconsistency, uncertainty, instability, slipperiness*, and so on", Antia et al. 2005.
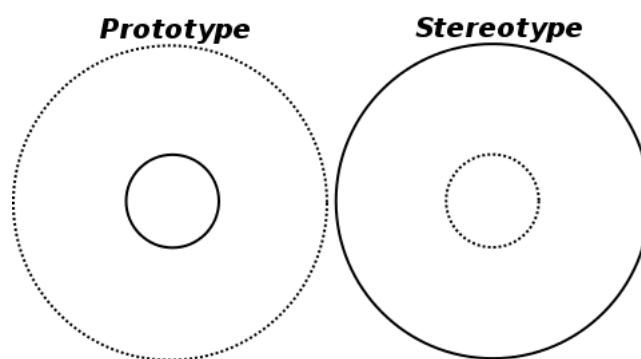
Figure 2.4: Prototype and stereotype concepts.

Here, we have graphically reiterated the idea that the prototypical construct is characterized by *indeterminate boundaries*, whereas the stereotypical construct is characterized by an *indeterminate center*. This is essentially what has been expressed in the above section as a feature of *subject-specific stereotype*.

With regard to the specifically *lexical* dimension, a further consideration needs to be introduced – the distinction between what we term *terminological stereotypes* and *conventional phrasal stereotypes*. To make it clear, we first need to distinguish the category of *terminological stereotype*, which comprises both the *semantic* and the *interpretative stereotype*.

One could say that *semantic stereotypes* are likely to be represented by terms denoting *general* or "thin" *concepts;* the stereotypical aspect here lies in the requirement that these terms have to meet certain *expectations* which are based on experience. By contrast, *interpretative stereotypes* are likely to overlap with the construct of *thick concept*, with the possible difference that they *seem* to suggest a clear definition of their *denotatum*.

The lexical units associated with either are likely to be in the grammatical class of noun, which has traditionally been the *preferred* unit of terminology research – sometimes to the exclusion of all other classes (Cabré and Estopà, 2006). This exclusive preference has sometimes been masked by including a variety of *derivations from the noun form*, such as adjectives or verbs (Sager, 1990, p. 58) or *phrasal constructs composed of noun forms*, sometimes distinguished into the subclasses of "*set phrases*" and "*collocations*" (Wright, 1997a, pp. 15/16). Practically, this thinking has to some extent been encoded in the design of terminological record formats; by extension, it also features in the design of terminological databases (ISO TC37/ SC 3 N 509, 2004). The common assumption underlying both the classification of terminological units and its encoding in templates is in either case that:

> *Terms* – even long noun-adjective strings – designate individual concepts, whereas *technical collocations* identify situations or propositions that are *for the most part made up of several mutually related concepts.* **The purpose of both elements is the same: to firmly delineate the conceptual and linguistic space occupied by strictly defined individual or closely associated concepts and units of knowledge.**
> Wright, 1997a, 16, my emphasis

It follows that "traditional" methods of *term selection* and *description* can be applied to the study of *terminological* – that is, *semantic* and *interpretative* – stereotypes if – *and only if* – the terminologist possesses sufficient awareness of the role of *stereotypes* in social discourse and cognition, *thick description*, *indeterminacy* and like phenomena to be able to attach the respective

significance to a unit expressed in noun form *or* to attach a noun or noun phrase to a *less clearly delimitable* cluster of lexemes expressing "stereotype significance" in running text.

Methods associated with sociocognitive terminology – such as the collection of text fragments, the mapping of metaphorical models, and hermeneutic methods in general are likely to provide beneficial complements to the traditional mode of operation. This may constitute another initial step in our considerations to account for the specific problems of terminology description in the context of the human sciences and philosophy.

2.5.5.4 Miscellaneous linguistic stereotypes

However, there is another problem that needs to be approached in a different frame of mind. As we hope our empirical case has shown, there are other "units" which must remain beneath the "radar" of *attention* if we operate on the assumption that terminological units are always nouns, adjectives and verbs exclusively associated with *explicit* knowledge.

In fact, it would be possible to argue that there are some which do not express explicit knowledge at all, although they can be seen to be associated with *tacit knowing*, especially as it relates to discourse *conventions*.

The designation for such fuzzier phrasal constructs in specialized discourse – verb phrases, qualifiers, hedges, or the lack thereof – in *generative linguistics* and *sociolinguistics* also happens to be *stereotype*, which suggests some potential abductive relationship to what we have called *discursive stereotypes*:

> A term used by some grammarians for a sequence of words which *resembles a productive grammatical structure but which in fact has been learned as a single unit and has little or no productivity*. **Proverbs, quotations, aphorisms and several types of idiom can be classed as grammatical stereotypes**: the sentence Jack and Jill went up the hill, for example, might be used by a young child who is not yet at the stage of producing co-ordinations or past tenses in spontaneous speech.
> Crystal, 2008, stereotype, my emphasis

While this seems to be cognate with the *cognitive* view of *paradigmatic stereotype* developed earlier, it is likely that the acquisition of grammatical, *syntagmatic stereotypes* is not restricted to small children or those with speech handicaps (ibid.). It is also likely to occur in the general population, which includes subject experts in training. The *sociolectal* dimension of such "fixed" expressions[18] is emphasized in a different sense in the definition of the term *stereotype* in sociolinguistics:

> In sociolinguistics, a term referring to a *linguistic variable which is a widely recognized characterization of the speech of a particular group, which may or may not reflect accurately the speech of those it is supposed to represent.*
> ibid, my emphasis

The first sense of the definition – disregarding its generative aspect – can be seen as explaining the individual's acquisition of stereotypical lexicalizations by contact. The second sense has a more social dimension and requires the introduction of the concept of *convention* to be fully appreciated. *Conventions* can be seen as central to the aspect of language use and are sometimes seen as as indistinguishably embedded in it:

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[18]A property again denoted by the prefix *stereo-* in *stereotype*. Here, the reading is however tied to the *fixed form* of the *syntagmatic stereotype* rather than to the *fixed idea or image* denoted by the *paradigmatic stereotype*.

> *Language, as we use it, is amongst other things a set of conventions.* When we
> learn a *language*, we join a *club*: and *the club has its own rules* regardless of what we
> may individually desire.
> Glanville, 2001, my emphasis

The "rules" of this "club" can be considered the rules of the *language games* that are played
by its "members". The term *language game* has been left undefined by its originator, Ludwig
Wittgenstein *(Bileztki and Matar, 2009)* – hence Zybatow's oblique "Wittgensteinian" reference
in the explication of the *interpretative stereotype.* The idea of *language game* has however come
to play a significant role both in sociocognitive terminology (Temmerman, 2000, p. 58) and
systemic terminology (Budin, 1996b, p. 178) as well as in radical constructivism (Glasersfeld,
1995, pp. 133/134).

Glasersfeld's interpretation of the *language game* is especially interesting with regard to proac-
tive language engineering if we consider the metaphor of a *machine* that can produce *re-
presentations* by virtue of semi-automatic operation, the "concept piano": "Wittgenstein says that
it [the symbolic aspect of language game, PBN] is like 'hitting the keys of a Vorstellungsklavier,
i.e., a kind of piano that produces re-presentations (1953, par.6)", (ibid.).

For now, our interest in *conventions* is merely analytical; we are looking for those traces
of *conventions* in texts which we discussed under the heading of *stereotype* and which we will
expand into a model of the *thick concept* of *disciplinarity* at a later stage. In this context, it
should be sufficient to say that the rules of terminologically relevant *language games* may include
those conventions applicable to the social construction of others and how to communicate them,
whereby the loop connecting the *linguistic stereotype* to the *social conception of stereotype* closes.

A second loop or circuit connecting *linguistic stereotypes* to their *cognitive* counterpart can be
seen in the observation that *stereotypical expressions* can be used with little effort and therefore
facilitate communication when they occur in the form of "conventionalized signs" which "are
based on an 'agreement' – *express or tacit* – established between a minimum of 2 persons.",
Picht and Draskau, 1985, 95, my emphasis. This express or tacit agreement gives rise to the
dimension of terminology use which has been subsumed under *acceptability* or *appropriateness*:

> *Appropriateness* is a purely pragmatic criterion *entirely dependent on the social
> norm.* Its rules are largely conditioned by the text type and form; greater flexibility
> exists in spoken variants. The conventions derived from frequently repeated special
> speech acts circumscribe the norm for appropriate word formation, syntactic expres-
> sion and text type selection. *Despite its elusive nature appropriateness is the most
> frequently used criterion in the evaluation of special communication*; not only is it
> used to arbitrate between the sometimes conflicting demands of economy and pre-
> cision, but it is also used to measure the highly specific and situation-conditioned
> messages of special speech acts.
> Sager, 1990, 106, my emphasis

In practice, the link between *cognitive*, *social* and *linguistic stereotypes* and *appropriateness* can
hardly be overestimated, but seems to receive little attention because of the fact that the lexical
units that express them are hardly considered worthy of consideration because they are not as-
sociated with units of *explicit* – as opposed to *tacit* – knowledge[19]. This will become clear if we

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[19]They are however given some consideration in the context of text/ corpus linguistics in the form of considerations
relating to *textual coherence*, which is dependent on a more "holistic" conception of "background knowledge".
Philosophically speaking, this is also a factor in *paradigmatic coherence* and thus a truth-bearing element in
some conceptions of *scientificity*, see (3.3.3).

relate our considerations of *stereotype* – which we consider an umbrella category for such phenomena – back to our case centered on the term *terminology science/ Terminologiewissenschaft*.

2.6 Stereotype and convention

Returning to our case of the formation *terminology science*, we can now draw the following conclusions. With regard to the *acceptability* of the term, we can say that it might have been the lack of this elusive quality which Sager lamented in the "illiterate" term pair *terminology science/ terminology work* in our above example.

Acceptable language use, as as the same author contests, is measured in terms of *adherence to conventions*. The double-bind therein, however, lies in the fact that the *conventions* that make a certain use of lexis acceptable to a given ((sub-)sub-)culture are both *arbitrary* and *unspoken*, or *tacit*. We can surmise that this should have made the standardizer's rather task difficult[20]:

> [C]onventions are regularities in behaviour which have emerged as *arbitrary but effective solutions to recurrent problems of interpersonal coordination*. Because they have proved effective, these solutions become the preferred course of action for individuals in a given type of situation. *Conventions grow out of precedent and social habit. They do not have to be explicitly agreed, but they presuppose* **common knowledge** *and* **acceptance**.
> Fokkema, cited in Hermans, 1999, 80/81, my emphasis

Assuming the perspective developed here, this would make *conventions* as they are internalized by the individual a form of the *paradigmatic* or *cognitive stereotype*. Lexicalizations in special language formed on this basis – i.e. *terminological* and *conventional phrasal stereotypes* combined with non-stereotypical, e.g. *prototypical* or logical formations – will be considered *acceptable* (or, in the constructivist diction, *viable*) if they conform to the language user group's *conventions*. These, in turn, can be seen to intersect partially – but not fully – with the set of *social stereotypes* that make a given group identifiable.

What remains to be clarified now are in essence the *contexts* where these considerations apply, the particular *granularity* that can be applied to the distinction of these contexts, and the practical role of these considerations outside such heavily controlled "laboratory" conditions as they prevailed in this chapter.

Our proposed further development includes relating the reflections on concept theory to particular activities terminology management cannot be imagined without, i.e. subject delimitation and term selection and description, especially in a contemporary, largely computerized environment .

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[20]To recall the results of our corpus-based micro-study, there was no *logical* obstacle to using the term *terminology science* at all.

Figure 2.2: The expected stereotypical associations attributed to stereotypical characters evoked by a decontextualized word. In this case German "*Masse*", approximately English "*mass*". Source: Fuchs 1969, p. 77.

3 Understanding declarative and procedural scientificity

Introduction

The last chapter has provided a proving ground for our view of *concept analysis*. To repeat, this was achieved by incorporating an interactive, process view involving a combination of both *paradigmatic* and *syntagmatic* (discourse) analysis. We have applied the method to reconstruct and explain the emergence of different discipline labels for the field of *terminology research* and found that a logically justified motivation alone does not convey *acceptability* to any formation (as has been observed in a different context, e.g. by Pavel, 1993). Terminological formations also have to prove viable in the face of *conventions*, which are apparently strongly dependent on the speaker community's intended use the term, which is in turn influenced by expectations. This has led us to hypothesize the role of stereotypical constructions in concept theory as used in terminological studies in general and to consider an appropriate conception for *philosophical terminography* in particular.

First we have collected various elements of a possible practical understanding of *stereotype* and set these in relation to the sociocognitive theory of terminology's understanding of *prototype* constructs in the life sciences. Then we have reconfigured an existing typology of cognitive and linguistic *stereotypes* – Zybatow's translation studies conception – in (2.5.4). To reiterate our understanding: *stereotypes* are, at the simplest, cognitive structures that reflect tacitly acquired and unreflected group conventions in the individual. They help reduce complexity in their social reality, a property that they will be seen to share with *models* and other *ideal types*. *Cognitive stereotypes* – which can, but need not include *social stereotypes* – can be hypothesized to produce signature lexicalizations that will be observable. These can – but need not – overlap the class of *linguistic stereotypes* proper. To link the considerations back to the idea of *thick concept*, we can state that *stereotypes* can certainly be thought to constitute an ingredient of these constructs. Other ingredients can be said to be *ideal types*, which *appear* stereotypical but can – in theory – be reduced to logical considerations.

In the following chapters, our aim is to harness this typology to three perennial problems encountered in terminography:

1. *Multilingualism* and the diversity of the natural language speaker communities which produce material for terminological evaluation and preparation;

2. *Subject delimitation*, which is generally recognized to be an important factor in reducing that range of material to manageable proportions;

3. *Indeterminacy*, which is a problem of term description and – in our view – partly related to conflicting or *underdetermined social stereotypes* shared among different subsets of subject

specialists and discourse producers. This is derived from (1), and partly linked to the phenomenon of *imports* and *inter-domain borrowings*, in which case it follows from (2).

It is hoped that the adaption of the construct of *thick concept* – which combines the established concept theories with the idea of *stereotypicality* and motivation – will add to the apparatus of existing terminological methods and specifically facilitate a personalized, semi-automatic approach to *philosophical terminography* that we will call the perspective of *terminology as a practical philosophy of information* or *regenerative theory construction*. This will then be situated as a second-order approach to *terminology research* growing from the understanding of *terminology as applied philosophy of science* (Budin, 1996b). This is the particular aim of the present chapter.

While the later chapters of the thesis will be dedicated to the investigation of "obvious" *stereotypes* and a number of specific cases for inducing *heuristics* for the study of the human sciences in particular, the present chapter is concerned with bringing forth a hypothesis on the genesis of stereotypical preferences from informal logical premises or *ideal types*, some of which may seem like "folklore" (like the debate on "positivism" versus "interpretivism", (1.2)) because they are to some extent "buried" in time[1] or in other disciplinary "fields". The question is, where do *stereotypes* and *ideal types* come from and how do they blend into a *thick concept* like *scientificity* or into each other?

While we still make reference to the *thick concept* of *scientificity* as it was derived from our observations in (2.2), we regard these reflections as necessary, given the purported view on what constitutes a *thick concept*. The aim here is generalizing *outward* from the particular case. The idea of *scientificity* (and later, *disciplinarity*) is a heuristic for understanding classifications of subjects (or distinction in general in this context) in fields outside of technical standardization or the life sciences as a matrix that can be used for empirical case studies later on. As these two *thick concepts* can generally be seen as *stratified*, consideration should also be given to *complexity*.

Arguably, the *complexity* surrounding the structure of subjects – whether socially or ontologically delimited – and the conceptual description of lexical units therein governed by varying conventions is such that practitioners *must* rely on *stereotypes* and other cognitive simplifications up to a point. These means can be seen to be to some degree "curated" by the discourse communities themselves, which may account for the impression of *self-centeredness* (Temmerman, (2.5.5.2)). However, as is to shown here, not all simplifications seem to be non-rational, as it may follow from the observation that not all *stereotypes* are prejudicial. Some can in theory be reduced to some logical proposition expressing the limits or preferences of what will in the following be considered *ideal types*. Separating the one from the other as far as possible is the concern of distinguishing the *thick concepts* of *scientificity*, or *theory-ladeness*, and *disciplinarity*, or *subject-specificity*.

3.1 Scientificity as thick concept

The point here is not define *science* – which can be said to be an impossible task given the sheer weight of literature on the topic – but to construct *scientificity* as a culture-related *thick concept* that can be usefully employed in our discussion and which is partially explicable in term

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[1]See (1.3.2) on the notion of *half-life*; it stands to reason that the longer the *half-life* of an influential text, the greater the chance that the original motivation of or argument for a preference have been forgotten.

of stereotype theory. In order to build up the auxiliary or provisional concept of *scientificity*, we shall explore three different possible routes:

1. A *syntagmatic* investigation into the structure of a semantic network, which should provide us with the lexically expressed properties of the noun *science*;

2. A *paradigmatic* investigation of the theories of justification that are applicable to the *concept of science*, as produced by *philosophers of science*;

3. An *operational* sketch of the *process of doing science,* as offered by pragmatic-constructivist philosophers and terminological theoreticians.

Ultimately, these will be folded into a personal standard or the perspective from which we investigate impressionistic *thick concepts* and their function in a variety of related human sciences that form a basis for a "philosophy of terminology" ("Philisophy [sic!] of terminology may be regarded as an attempt to understand the nature of the term and its relationship with the intellect and the world [...] the philosophical aspect of terminology is a study of the term from the *scientific point of view*", Alexeeva, 2003, 61, my emphasis) which proposes methods for multilingual description, subject classification and the disambiguation or determination of terminological units by the practitioner.

This analysis will clarify and operationalize the proposed *thick concept* of *scientificity* that was already foreshadowed in section (2.2) of the preceding chapter, and will in the successive chapters loop back into the problem of *stereotype* by way of its use in analyzing discourse examples for the analogous *thick concept* of *disciplinarity* .

3.2 Circular definitions of science

In terms of the *syntagmatic* investigation which recurses to the general usage of the noun *science*, we have focused our investigation on the *lexical database*, *terminological ontology* (Sowa, 1999) and *semantic network* WordNet which we will employ throughout this treatise as a reference work for the *synchronic*, general vocabulary of English. This parallels the precedent of the use of an older volume of *Duden* for German in the last chapter. This choice of instrument is motivated by both practical and theoretical concerns. WordNet has a unique organization that is opportune for our style of interactive analysis: its entries actually combine lexical/ *semasiological* information (*senses*) with conceptual/ *onomasiological* features (*concepts*):

> WordNet® is a large lexical database of English [...]. Nouns, verbs, adjectives and adverbs are grouped into sets of cognitive synonyms (synsets), each expressing a distinct concept. Synsets are interlinked by means of conceptual-semantic and lexical relations.
> WordNet homepage, Wordnet Contributors (2010)

Perhaps for this reason, WordNet is studied as a phenomenon in its own right in terminological research (Wright, 2007, p. 160, Kageura, 2002, p. 64, Temmerman and Kerremans, 2003) *and* employed as a research tool for uses similar to the present one (Wright, 2003, p. 112). Predictably, this popularity is also evident in closely related disciplines like natural language processing, lexicography and lexicology (Fontenelle, 2008b, p. 14).

The construction of the so-called *synsets* follows the "psycholexicological" approach to describing associative relations in "lexical knowledge" (Miller et al., 2008, p. 328). This should make WordNet a productive resource for researching *prototypical* or *stereotypical* constructions. Surprisingly, an attempt to define the noun *science* yields a circular definition, which refers the user to the lemma *scientific discipline*:

1. a *particular branch of scientific knowledge*; "the science of genetics" [syn: scientific discipline]

2. ability to produce solutions in some problem domain; "the skill of a well-trained boxer"; "the sweet science of pugilism" [syn: skill]

For now, we shall leave the second sense of *science as skill* unconsidered; we will return to it under (73) and consider it as a different aspect in the *thick concept* of *scientificity*. According to WordNet, *science* and *scientific discipline* are synonymous; the definition is circular insofar as the adjective *scientific* is necessary to explain the concept, whose intensional or cognitive content would reside in the property of *scientificity* (hence our coinage). This phenomenon propagates further to the definition of the compound *scientific discipline*:

> a particular branch of *scientific knowledge*;
> "the science of genetics" [syn: science]

As noted, the core information hinges again on the adjective. Conversely, a look-up of *scientific* gives us two senses, the first of which leads back into the semantic loop; this is also the case when following the antonym *unscientific*. Only the second sense in the *synset* yields a clue to possible phrasal constructs which could present discrete intension:

> **scientific**, adj .

1. of or *relating to the practice of science*; "scientific journals"
2. *conforming with the principles or methods used in science*; "a scientific approach"
   [ant: unscientific]

Here, however, the associative trail in WordNet ends or reverts to the understanding of *science as skill*. In order to find some explicitation of what the *principles and methods* entail, we need to go outside of WordNet, e.g. to this compendium of ideas at a medium level of specialization:

> **science**[.] any *systematic field of study or body of knowledge* that aims, thorough *experiment, observation and deduction*, to produce *reliable explanation of phenomena*, with reference to the *material and physical world*.
> Hutchison contributors, 1994, science, my emphasis

Compared to the preceding example, this definition appears well-formed and lists "systematic study or body of knowledge" as intension as well as the processes or activities of "experiment, observation, [...] deduction" as extensional properties. However, we can discern that the definition is also value-laden, which can partly be explained in terms of *stereotypes*: the defining paragraph stresses the essential aspect of making observation statements about the "material and physical" world and thereby equates the concept of "science" with the natural or social sciences (the latter

are however much less *prototypical*). This is reminiscent of Budin's and Wright's observation (1997, cited in 1.2.2) on the *acceptable* and *conventional* use of the term *science* in English.

However, the *paradigmatic* counterexample of a "systematic field of study" or "body of knowledge" that can and does develop from "experiment, observation and deduction" without specific reference to physical causation[2] serves to expose this conception as *stereotypical*.

What is shown here is specifically an *associative stereotype*[3] which we have subsumed under the family of *subject-specific stereotypes* because their suggested associations seem to be under the influence of *conventions specific to a particular sector of social reality*.

Then there are other underlying expectations that remain tacit and obscure[4] unless we raise the level of specialization and look at a discourse that may contain explicitations of the conventions that underlie the *associative stereotype*. Finally, there are also specifications of requirements which call for a somewhat different perspective: who or what determines the *conventions* that determine what shall be taken as "systematic study" or "reliable explanation of phenomena"?

3.3 Scientificity and philosophy of science

Interestingly, the study of such guiding (meta-)conventions is relegated to an area *outside* the commonsense understanding of *science* in the same dictionary. This area is the so-called *philosophy of science*:

> Today, scientific research involves an interaction among tradition, experiment, observation, and deduction. *The subject area called philosophy of science investigates the nature of this complex interaction, and the extent of its ability to gain access to the truth about the material world[.]*
> Hutchison contributors (1994, my emphasis)

Like pure mathematics, this would constitute another counter-example that could be used to exert pressure on the idea of *science* as a domain that studies the physical world *exclusively* in a thought experiment. The social or individual pursuit of *scientificity* is strictly placed outside the scope of *science* insofar as it is seen to be the object of the *philosophy of science*[5].

Problems like this are what different "theories of truth" formulated in this field seek to address and/ or "explain away". Furthermore, it could be expected that explicit discussions of what constitutes "systematic study" and "reliable explanation" would also recur in this context. Finally, terms might be proposed to demarcate these standards. Three examples for theories of truth would be *naturalism*, *foundationalism*, and *coherentism*. Each of them can be argued to have left some mark on theoretical terminology. As *categories*, they can be seen as abstractions that mark the end-point of some experiential continuum of theorizing and hence constitute what we called *ideal types*.

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[2] compare the *mind-body problem*, (1.1.2). What about, e.g. pure mathematics?

[3] again, defined as "attributions of features or properties that are not constitutive of an exemplar's category membership but rather *reflect what a culture considers a typical attribute* of a given exemplar X", Zybatow, ((2.5.5.2), my emphasis).

[4] The technical terms for this phenomenon of insider and outsider knowledge are *etic* and *emic*, whereby the first denotes "what actions 'mean' within a culture or cultural group, " and the latter refers to "tangible human actions and their motives and consequences" (Beaugrande, 1995, § 26). A *thick description* must be intelligible from both perspectives, hence the structure of the present section.

[5] Either we accept this as it stands, or we must contend that *philosophy of science* is science, too. The *acceptability* of this contention is to no small degree culture-specific, see the following chapters, especially the case studies (8).

Due to the orientation of this work, we have found it unnecessary to discuss a fourth "theory of truth", which might be called "*correspondence theory of truth*" (Riegler, 2001; Riegler, 2007) (also called *representationalism* (Riegler, 2005, p. 4)) and which can be seen as associated with the metaphysics of (naive) realism:

> The theory of truth most conducive to the needs of a realist is the so-called correspondence theory of truth. The general idea [...] can be illustrated in commonsense terms in a way that makes it appear almost trivial. According to the correspondence theory, a sentence is true if and only if it corresponds to the facts. The sentence 'the cat is on the mat' is true if the cat is on the mat and is false if it isn't.
> Chalmers, 1999, p. 228

At the simplest, this view can be countered by observing that "cognition does not seem to compare pictures with 'reality'" (Riegler, 2007) and that we cannot just step outside cognition and perception to access that "reality" directly (Glasersfeld, cited ibid.).

The fact that this statement can be underwritten with reference to the empirical findings of neurobiology (e.g. by "*the principle of undifferentiated encoding*", which holds that the nervous system "interacts necessarily only with its own states"; Riegler, 2001, p. 5) *and* the logical conclusions of (ancient) philosophical skepticism (Glasersfeld, 1995, pp. 26/27 and Chalmers, ibid.) points to the underlying tension between *naturalism* and *coherentism* that can be diagnosed in most constructivist thinking if one deems the category of "theory of *truth*" itself applicable. This is an observation which points to the problem that hybrids or mixed forms between these *ideal types* seem perfectly possible. Here, we are however anticipating our argument.

More interesting in the present context is the question to what extent the problem of circular definition we have found for the noun *science* in WordNet recurs or is resolved on this deeper level of specialization.

If we continue to assert that the *syntagmatic* and *paradigmatic* aspects of the associated term/concept are inextricably linked – as was the fundamental contention in our conception *interactive concept analysis* – we can induce the hypothesis that the "lexical loop" or circular definition we have encountered is likely complemented by an analogous *paradigmatic* or conceptual "loop" (a perhaps a logical circularity) which can be identified, defined and named. In this process, the discursive evidence for it can be processed and archived; this will however be discussed later in Chapters (4) and (5).

3.3.1 Naturalism

Indeed the problem of circularity does seem to recur in the context of philosophy of science. One example for it is here associated with the *scientificity* concept or theory of truth of the school of *naturalism*:

> Naturalism is often summarized by saying that *"philosophy should be continuous with science."* [...] Naturalists reject the idea that philosophy should be sharply separated from other fields. In particular, naturalists hold that there should be some kind of *close connection between scientific theories and philosophical theories*, but they do not all agree on what this connection should be like. [... Another ...] *summary of naturalism is the idea that philosophy can use results from the sciences to help answer philosophical questions and can do this even in the philosophy of science itself. From the perspective of many other philosophical positions, to use scientific ideas when theorizing about science involves a vicious circularity. How can we assume, at the*

outset, the reliability of the scientific ideas that we are trying to investigate and assess? Surely we have to stand outside of science when we are trying to describe its most general features and assess the integrity of its methods.
Godfrey-Smith, 2003, pp. 149/ 150

If we assert the continuity of science and philosophy, the members of a scientific community can in effect themselves define what counts as *scientific* simply by engaging in philosophical writing on the practice or concept of *science.* To the extent that the subject experts in questions *are* natural scientists, the requirement that *science*[6] deal with the phenomena of the physical – rather than, say, the mental – world would follow as a matter of course or at least as one of habit.

Complementary to this phenomenon is the observation that – if we assume that the idea of *naturalism* is widely and unquestioningly accepted in the English-speaking world, as suggested by our discursive samples – the ideas of scientific specialties (commonsensically understood as those researching the phenomena of the material world) will enter the discourse of philosophy of science by citation and thus – terminologically speaking – by what can be considered *imports* or *inter-domain borrowings.*

3.3.1.1 Imports

By *imports* we can understand terms which are borrowed from other subject fields. This can be taken to be in general independent of the level of abstraction or specialization of either field, or the natural language of origin. Imports are technically one-way – though this may seem a self-defeating assumption:

Many phenomena of specialized communication are really results of terminological exchange in the direction of the specialty in question. In the course of this exchange, terms from a different specialty are being used in such a way that the ontological structure [*Ger. Sachstruktur*] they evoke is being coupled with the linguistic structure of the receiving subject field in such a way that the term(s) can activate subject-specific knowledge. This can be seen as a form of hybridization. [...] *With regard to some words, several possible fields of origin are conceivable.*
Rehbein, 1998, 696, my translation and emphasis

With regard to the problems facing philosophical terminology description, the problem of *imports* may be formulated thus: if terms are to be recognized and described, an apt description hinges to no small degree on identifying the source field of the term, which is likely to contain the reference material necessary for the definition or explanation of the unit. If the terminological unit has already cycled through several fields, its description must to some extent account for the semantic changes that this entails. At this point, the problem of *import* becomes a problem of *directionality.*

3.3.1.2 Inter-domain borrowing

Inter-domain borrowing is a generic term that we propose for the description of a family of *directed import* phenomena that – unlike *calque* or *secondary term formation* as discussed in (2.2) – take place between varieties of one and the same natural language.

A variant of this is, for example, a borrowing between general and specialized language or vice versa. The first occurs when "a special-language term becomes field-external and is used

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[6]mostly? exclusively?

in the general language" and the latter when "a general-language word is adopted for a special language" (Ahmad and Collingham, 1995).

Such phenomena – and among them likely the former – have been studied by Ingrid Meyer under the category of *de-terminologization* which entails "*intra-domain polysemy*" and "*inter-domain lexical sharing*" (Bowker and L'Homme, 2004, p. 186).

The phenomena can be taken to belong the *syntagmatic* sphere of the "dynamics in discourse", where they raise the question of "[h]ow *inter-domain interaction* in discourse affects the *structuring, formation and change of terms and terminology* of one *domain*", presumably also the receiving one (Kageura, 2002, 270/271, my emphasis).

Here it is assumed that *inter-domain borrowing* affects not only particular formations but entire *conventions* of term formation, which is an interesting idea indeed. This however would be the *directed import* from one special language variant to the other, whether by the "detour" of general language or *de-terminologization* or not. We can generally assume that inter-domain borrowing takes place when "a term from one special language is adopted by another special language" (Ahmad and Collingham, 1995). The *recognition*[7] of *inter-domain borrowings* has been taken as essential for *term selection*, e.g. in standardization (Strehlow, 1997, p. 206).

From the vantage point of *philosophical terminography*, the study of dimensions of *scientificity*, e.g. of the ideology of *naturalism*, might contribute to the understanding of the motivations possibly underlying certain *inter-domain borrowings* in the social sciences and humanities.

Both *imports* and *inter-domain borrowings* will leave lexical traces which can then *paradigmatically* solidify into what we have subsumed under *subject-specific stereotype* in (2.5.5.2). Their *syntagmatic* forms or the borrowed terms themselves might not only be *homonyms* in terms of a natural language's entire lexicon but also become templates for derivative term formations, as Kageura suggests. Their associated cognitive content, however, would be a matter or the by-product of *interpretation*. Ironically, the term *interpretation* can itself be used as an example for this phenomenon:

> Interpretation is a frequent term not *only in literary studies*. It is used by *musicians and lawyers, actors and priests, translators an psychoanalysts, computer scientists and diagnosticians*, and some time ago, when private airplanes began to come on the market, there appeared *publications on how to interpret clouds. It is, of course, not unusual for a term to be borrowed by diverse professions and then to be used with a somewhat modified meaning, or metaphorically, or even in an unrelated way.*
> Glasersfeld, 1983

Here, it is assumed that the concept of interpretation originated in literary and/ or theological studies and had, over time, been adopted and reinterpreted elsewhere (compare *hermeneutics*, (1.4.3)). This example is of course is unrelated to the substance of *naturalism*, but it illustrates how the mechanisms of *import* and *inter-domain borrowing* can be thought to function. What is borrowed *in addition* to the terminological unit itself are the value judgments related to *scientificity*.

The influence of *naturalist* thinking in the philosophy of science can hardly overestimated; it would not be an exaggeration to state that most major theoretical constructions influencing the

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[7]In this context, it is sensible to adopt the distinction between *recognition* and *re-presentation* as technical terms. "In recognition, the perceiver merely has to isolate the particular elements in the sensory manifold [...] In re-presentation, on the other hand, some substitute for the sensory raw material must be generated." Glasersfeld (1995, p. 96). In a terminological context, *recognition* should be seen *functionally* as the passive command of a particular terminology, whereas *re-presentation* is the active command of the same.

present work can be accommodated in an approximately *naturalist* mold. A few examples for this include:

- *systemic terminology*, (Budin, 1996b, pp. 2,24) which uses some models from evolutionary biology;

- on a somewhat different interpretation thereof, also *radical constructivism* (Glasersfeld, 1995, pp. 43/43, 50 and Riegler, 2006), which additionally incorporates *information theory* as an indicator of naturalism[8];

- de Beaugrande's conception of *discourse linguistics* can be considered partially *naturalist* by same token, e.g. (Beaugrande and Dressler, 1981, ch. 9) in addition to its use of various analogies from physics, (Beaugrande, 1997d; Beaugrande, 1996);

- *General System Theory*, which originates in empirical biology itself (Bertalanffy, 1968a).

This list is in no way as exhaustive or as detailed as it might be. In relation to *stereotypes*, we might say that *naturalism* is not in itself a *stereotype* (unless it metastasizes into a rigid scholastic orientation or institution), but that it can be seen as a template or instrument for minting potential *subject stereotypes* by way of *imports* or *inter-domain borrowings*, not to mention *conceptual metaphors* – insofar as these are taken to be more basic than the other two phenomena. It can certainly be seen as an *ideal type*. Furthermore, *naturalist scientificity* can function as a *prototype* insofar as it is tacitly assumed to be identical with *the* philosophy of science:

> **Science (philosophy of)**. Primarily the study of how how science works, or should work. *The study of how it does is normally taken as a study of how it should.* [... P]hilosophy of science *studies the process, taken as a whole*, whereby we start from premises about the world and reach, by rational means, conclusions about the world which cannot be reached by deduction alone.
> Lacey, 1996, philosophy of science, my emphasis

On the strength of this perspective – which also tacitly restates the primacy of deductive methods – the *descriptive* study of science *by* scientists becomes the *prototype* of philosophy of science by conventional acceptance. This is reflected in, e.g., this fragment:

> In this paper, we present an analysis of texts in *nuclear physics **and** the philosophy of science* to argue that the in-text deconstruction and reconstruction of *scientific reality*, mainly through manipulating the terminology of a given specialist domain, plays an important role in both the *genesis of science **and** the genesis of the philosophy of science.*
> Ahmad, 1996a, 1, my emphasis

It hardly needs to be restated how the "continuity of science and philosophy" is evoked here by syntactic means alone. The effect is established by "reduplication" as a "morphological device" and by means of the *conceptual metaphor* CLOSENESS IS STRENGTH OF EFFECT, which "can also apply to the syntactic form of a sentence." (Lakoff and Johnson, 2003, pp. 128/129). Linguistic interpretations aside, the idea can also be found in an explicit form:

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[8]"Philosophers and psychologists are attracted to information theory because of its potential as a useful tool in describing an organism's cognitive relations to the world. The attractions are especially great for those who seek a naturalistic account of knowledge, an account that avoids normative - and, therefore, scientifically unusable - ideas such as rational warrant, sufficient reason and adequate justification." Routledge Contributors, 2000, p. 396

> To a very great extent the term 'science' [hence the property of scientificity, PBN] is reserved for **fields that do progress in obvious ways**. Nowhere does this show more clearly than in the recurrent debates about whether one or another of the contemporary social sciences *is really a science*. [...] Probably questions like the following are really being asked: *Why does my field fail to move ahead in the way that, say, **physics** does?* What changes in technique or method or ideology would enable it to do so?
>
> Kuhn, 1970, p. 170

The view of science as process, on the other hand, will point the way to our third possible variant of ideal-typical *scientificity*, the pragmatic and/ or operational understanding of *scientificity*, but before we will need to briefly present two more competing, perhaps less *prototypical* ideologies of *scientificity* that emerge from the philosophy of science.

3.3.2 Foundationalism

Such alternatives are, for example, *foundationalism* and *coherentism*. *Foundationalism* is ostensibly opposed to *naturalism*, and seeks to break out of the "vicious circle" by relegating the definition of science to philosophy, which in this case is seen outside the sphere of *science* proper:

> The idea that we should do the philosophy of science from an **external and more secure standpoint** is often referred to as foundationalism. [...] *Foundationalism requires that no assumptions be made about the accuracy of particular scientific ideas when doing philosophy of science.*
>
> Godfrey-Smith, 2003, 150, my emphasis

That *foundationalism* implies the adoption of a particular variant of philosophical epistemology is our interpretation of this position and some would undoubtedly balk at it, given that *foundationalism* is normally defined as the belief that "reasons rest on a foundational structure comprised of '*basic*' beliefs" and "derive *none of their justification from other propositions*" (Routledge Contributors, 2000, 247, epistemology). This statement can be seen to deny the dependence of *foundationalist* reasoning on a ready-made philosophical system and seems to imply that "true knowledge" – or *scientificity* – derive *directly* from either intuitive insight or experience.

Practically, this would hardly ever be observed to be the case; it is relatively safe to state that "foundations" of this sort are derived from some variant of rationalist ("interpretivist") or empiricist ("positivist") epistemology or their countless sub-variants (1) rather than from direct and/ or uneducated ratiocination or observation[9], even if only *indirectly*, by merit of the fact that theoreticians *are* trained in or otherwise acquainted with one or the other version of it[10].

In some sense, the premise of *foundationalism* (if so understood) seems to be implicit in the debate briefly discussed in the context of *paradigmatic analysis*[11] (1.2.3.1). Here, we are not so much concerned with the finer point of the debate than with the question as to what extent *foundationalism* can be seen to exert an influence on the *thick concept* of *scientificity* in terminology research and *stereotypical* conceptions that can be found in some discursive artifacts in this context.

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[9]This would also be inopportune for philosophical or scientific writers, who would then have to leave their claims *unguarded* by discursive "allies"; this will however explained further down.

[10]This can be compared, by analogy, to the experience of medical students learning to interpret X-Ray images (Polanyi, cited in Chalmers, 1999, p. 8). In sum, one may consider the "foundations" talked about here *tacitly and gradually acquired philosophical assumptions* or beliefs that *influence* the use of the more basic faculties.

[11]Whether or not *paradigmatic analysis* is a successful method of doing philosophy can now be considered an example for a debate between the adherents of empiricist and rationalist *foundationalism*.

Specifically, we state that *terminological foundationalism* confronts us in the form of the contention that terminology research either already is a *science* or that it gains the *potential of becoming one* by way of adopting a specific philosophical or, more often, semantic concept theory that provides its *foundations* – hence the term *foundationalism* in the understanding we are trying to develop:

> Philosophy was [...] the first discipline to reflect on what a term is, what the relationship between terms and objects is, and whether terminology describes reality or constructs a representation of reality. *According to Alexeeva, Philosophy has helped terminology to achieve the status of a science.*
> Alexeeva, 2003, 81, my emphasis

While this statement needs to be considered in the context of the historical development of traditional terminology from the logic of the Vienna Circle (ibid.), the argument recurs – with regard to semantics – also in "unorthodox" schools of terminology:

> *Terminology as a scientific discipline* needs to open up to methods for studying the role of language in the creative process of the growth of knowledge. *From linguistics it could borrow precise methods for research* such as the method explained and exemplified by Geeraerts for the description of diachronic change based on corpus analysis and partially applied here in the description of molecular cloning (for a second example see Temmerman 1998, Chapter 6 on splicing).
> Temmerman, 2000, 153, my emphasis

Our point in this regard is that *foundationalism* suggests that the *foundations* (in this case of those of terminology research) are to be sourced from a different field rather than defined within the discipline itself, on the grounds of empirical observation or not. The strongest statement of this tendency can be found here:

> **If the conceptual description of terminology constitutes the theory of terminology, then this cannot be distinguished from the theory of linguistic semantics.** What researchers are doing within the traditional theory of terminology is thus **no different** from what researchers are doing with lexical semantics in general linguistics.
> Kageura, 2002, 23, my emphasis

In this case, all concept-oriented aspects of terminology research are relegated – from the *foundations* up – to the neighboring field of lexical semantics. From our standpoint, strategies like this are likely to have lead to the phenomenon that *terminologists as a social group* have developed different conceptions ("schools") of terminology research *founded* on the *foundations* of already differing schools of semantics, e.g. the *frame-based terminology* (Montero-Martínez and Faber-Benítez, 2009) or – if one takes the theory of cognitive semantics to be constitutive of the identity of the theoretical edifice *per se*[12] – *sociocognitive terminology* (ibid, and Montero-Martínez and Garía de Quesada, 2004).

The problem with the *foundationalist* conception of *scientificity* becomes clear when contrasting it with *naturalism* on the one hand and with *coherentism* on the other.

Unlike the *naturalist* conception, which borrows and adapts models that are thought to explain some empirical phenomenon in the natural sciences to a context in philosophy or terminology (e.g.

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[12]To us, it rather the innovative *combination* of *different* methods and elements (epistemic anarchism, cognitive semantics and linguistics, deconstruction) with a unique *epistemic interest* (in polysemy, creativity, analogy in the life science) that constitutes the identity of sociocognitive terminology as a research program.

(Darwinian) evolution to (specialized) language change, Budin, 1996a) on the tacit assumption that they might explain *similar* phenomena equally well, *foundationalism* as it is here understood might arguably lead to the gradual *replication* of arguments, debates and discourses that have already been carried forward in the *field of their origin* for a long time *before* the fundamental position in question was adopted in the respective *host field*, e.g. terminology research.

This phenomenon might become especially pronounced whenever the position in question comes "under fire" from another *foundationalist* group who *fundamentally disagrees* with it; the debate then will lead to *stereotypical* portrayals of the opposing approaches – whose output is judged by the standards of "one's own" school – and therefore to the proliferation of *social stereotypes*. A possible side-effect may be seen in the increasing rigidness (i.e. the "stereo-"typicality) of the theorizing developed from the premises, although this may also become a feature of *coherentism*. To sum up, the *foundationalist* understanding of *scientificity* lives by a *black-boxing* – in the metaphorical sense of Latour, 1987, p. 21 rather than the literal/ technical sense of the term – of the propositions produced in neighboring fields.

Foundationalism can – if applied to fields like terminology and the human sciences in general – lead to the phenomena discussed in the final chapter of the thesis (8) and seems to be most productive in terms of *stereotypical* concepts and terminology.

3.3.3 Coherentism

A third potential conception of *scientificity* which is not so much a feature of terminology research (yet) but rather one of the constructivist community is *coherentism* – even if one admits that especially radical constructivism, which is described as a "post-epistemological stance" (Thompson, 2000, p. 471) rather than an autonomous field of science – has less of a need for *coherentism* as an *ideal type* of *scientificity*. Generally, *coherentism*, otherwise known as the *coherence theory of truth*, is a rather indeterminate *category* as it is predicated on a very loose understanding of *coherence* in philosophy:

> The term 'coherence' in the phrase 'coherence theory of truth' has never been very precisely defined. *The most we can say by way of a general definition is that a* set of two or more beliefs *are said to cohere if they 'fit' together or 'agree' with one another.* Typically, then, a coherence theory of truth would claim that the beliefs of a given individual are true to the extent that the set of all their beliefs is coherent. *Such theories, thus, make truth a matter of a truth bearer's relations to other truth bearers rather than its relations to reality. This latter implication is the chief hindrance to plausibility faced by coherence theories, and most coherence theorists try to escape the problem by denying that there is any extra-mental reality.*
> Routledge Contributors, 2000, 899/900, coherence theory of truth, my emphasis

That constructivist epistemology has a close fit with this perspective is evident from the following samples; however, constructivism escapes from two of the three problems associated with the *coherence theory of truth* by dispensing with the notion of *truth*, which is consequently substituted with the concept of *viability*:

> *Viability* on the conceptual level refers to the *experiential fit and the mutual compatibility of the cognitive organism's conceptual structures* and is closely linked to what philosophers call the "*coherence theory of truth*". Hence, radical constructivism can be described as a theory of knowing that attempts to separate the concept of knowledge from its traditional iconic relation to ontology.

Glasersfeld, 1991a

On the other hand, the problem of a "denial of reality[13]" is addressed by positing a divergent relationship between *ontological reality* on the one, and *experiential reality* and subjective knowledge thereof on the other hand; as we are primarily concerned with (specialized) language use, this fragment may exemplified the point with reference to the "reality" of referents and discourse participants:

> Language [...] opens a not quite transparent window on the abstractions and representations individual speakers glean from their experiential reality, but *it does not, as analytical philosophers were hoping, open any window on the ontological reality of an independent world.* [... T]his is not a denial of reality, nor does it deny that we interact with other speakers and with an environment; but *it does deny that the human knower can come to know reality in the ontological sense.* The reason for this denial is [...] that *the human knower's interactions with the ontic world may reveal to some extent what the human knower can do – the space in which the human knower can move –, but they cannot reveal the nature of the constraints within which the human knower's movements are confined.* **Constructivism [...] does not say there is no world and no other people, it merely holds that insofar as we know them, both the world and the others are models that we ourselves construct.**
> Glasersfeld, 1995, p. 137

However, the notion of *coherence* itself also remains *underdetermined*[14] and is explained as something loosely linked to the idea of the purposiveness of knowledge, which is inherent in the idea of *viability*. At a minimum, the idea of *coherence* here entails the requirement that a conceptual construct should not only solve an experiential problem, but also *fit* into a subject's preexisting *conceptual system*: "the new pieces of knowledge we construct not only have to satisfy the particular problem for which they were constructed at the moment, but ideally they *should also fit into the other structures that we already have*", (Glasersfeld, 1994).

The key to mobilizing *coherentism* as both a measure of *scientificity* in the theory of terminology research and an indication of the role of *stereotypes* in its practice lies in the second half of above sentence, where we need to supplement the idea that *coherent* is what fits a pre-existing cognitive (*paradigmatic*) structure with the requirement that this structure must also be capable of being communicated *coherently* on a *syntagmatic* level, e.g. by lending itself to formulation in the form of a written or spoken text. If we take this to be the case, we can substitute the indeterminate idea of *paradigmatic coherence* with the somewhat more palpable idea of *syntagmatic*, or *textual coherence*.

In text linguistics and derived forms of translation studies – as well as in terminology research, with reference to both specialized translation and technical writing; Budin, 1996b, pp. 110, 158 – *textual coherence* has been defined rather more precisely as a characteristic integral to *textuality*, or "the requirement that texts hang together conceptually" (Hatim and Mason, 1990, p. 239) or, specifically in relation to *syntagmatic* form, that "grammatical and/ or lexical relationships involve underlying conceptual relations and not only continuity of forms [which would be cohesion, PBN]" (Hatim and Mason, 1997, p. 214). As there are a variety of constructs and factors that

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[13]Positing that an ontic reality doesn't exist would be a strong statement on the *iconic* relationship of knowledge and reality – if a negative one – and would therefore break the *coherence* of constructivist theory.

[14]"[U]nderdetermination of scientific theory by evidence is the simple idea that the evidence available to us at a given time may be insufficient to determine what beliefs we should hold in response to it.", Stanford, 2009

can be seen to contribute to this idea, we can justify our tenet that terminology research might want to be agnostic and egalitarian with regard to semantic theories:

> [C]oherence, [...] is inferred from background knowledge. Various terms are used for talking about background expectations: *frames, schemas, scripts, prototypes, and stereotypes.* For example, we have widely shared expectations about recurring events [...] These events all involve typical actors, equipment and activities: these are the default values of the schema, which are taken for granted, and can normally be left unsaid, because they can rely on group knowledge.
> Stubbs, 2001, 117, my emphasis

Insofar as a *coherentist* theory satisfies the requirement of *intersubjectivity* – after Heylighen (below), this means that its formulation displays sufficient *formality,* which could be linked to the *cohesion* of its text – it must also meet the *coherence* criteria that its potential recipients have constructed. This requires a *fit* between the expectations they bring to the interpretation in the form of cognitive constructs that could alternatively be construed as *prototypes, stereotypes, schemas, logical concepts,* etc. and the communicative effect that the theoretician hopes to evoke. In this regard, *coherentist scientificity* entails the use of a measure of *stereotypes* in order to maintain its own standards for *coherence.*

Coherentism is – to the best of the present author's knowledge – not a common "theory of truth" or foundational ideology, which is perhaps due to concerns about its plausibility. However, from an analytical vantage point, the exerting of "pressure" on the *coherence* of texts[15] practically amounts to embracing *coherentism* as methodological perspective *and* seems to be one possible way of practicing *philosophical terminography.* This is why the principle appears important:

> *Putting pressure on the text in order to draw the 'controlling ideology' to the surface* typically has one of two major results. Either coherence increases when we recognize the overall *'control system'* with an *operative set of central terms 'controlling' each other*, and we see the role of claims which, if taken in isolation, might seem surprising, unmotivated, or simply vague. Or, coherence decreases when we find *conflicts of interest*, e.g. when an authority dismisses claims quite compatible with his own theory merely because they have been advanced by a rival.
> Beaugrande, 1994, § 48

The link to terminology description in philosophy should be obvious insofar as the text is here assumed to express a model of a concept system expressing a "controlling ideology", which might in turn be expressible in terms of an *ideal type* or those elements of *thick concepts* that resemble such. "Control" in this sense is already implicit in the "action-guiding" property of *thick concepts.* With regard to "conflicts of interest" and other fault-lines, these should normally be discernible in the choice of terms used in the text, e.g. the preference for *action* or *behavior* in some psychological or sociological writings (Levering, 2002). These would however be more common in *foundationalist* or perhaps naturalism-inspired literatures. The fact that texts may contain *incongruent* terminologies which allow this kind of analysis points to the phenomenon that the described *ideal types* are precisely that, and that in any instantiation, overlaps between the forms may occur.

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[15] *Concept analysis* or discourse analysis which involves *syntagmatic* comparison and/ or *paradigmatic* thought experiment can be seen as a means to do so (1.2.2).

3.4 Ambiguity of philosophical requirements of scientificity

In terms of the role of expectations and *stereotypes*, a possible overlap with *foundationalism* can be ascribed to *coherentism*. It occurs where the required terminology and its conventional associations are provided by the "axioms" of the philosophical or semantic theory that provides the *foundations* to the interpreters who are also *potential critics* of *scientificity*. Also, a *coherentist* theory could be required to closely adhere to *foundationalist* premises instead of its own, autogenic tenets. We assumed this to be case (for empirical reasons) even for radical constructivism itself in the context of its terminology; in other words, we think it is not possible to have propositions in a theory that "derive none of their justification from other propositions" *outside* the sphere of its internal *coherence* (Routledge Contributors, 2000, p. 247) if one is dealing with natural language-derived theoretical constructs[16]. This might explain why

> In contrast to foundationalism, coherentism claims that every belief derives some of its justification from other beliefs [. . .] All coherentists hold that, like the poles of a tepee, beliefs are mutually reinforcing. *Some coherentists, however, assign a special justificatory role to those propositions that are more difficult to dislodge because they provide more support for the other propositions and are more supported by them. The set of these special propositions overlaps the set of basic propositions specified by foundationalism.*
> Routledge Contributors, 2000, 247, my emphasis

On the other hand, a degree of overlap can also be stated for *naturalism*, where the criterion of *scientificity* would reside in a *coherent* application, extrapolation or generalization of the models produced by "hard" sciences or their philosophical interpretation. The latter are difficult to distinguish due to the *theory-ladeness* of observations, or the question "whether observational evidence can be considered an unbiased or neutral source of information when choosing between theories, or whether observations tend to be "contaminated" by theoretical assumptions in a way that prevents them from having this role" (Godfrey-Smith, 2003, pp. 155/156). As this *secondary* use of scientific concepts and terms is in any case tentative, the main criterion for *coherence* (or *scientificity* on the *coherentist perspective*) would be *negative*, i.e. that the novel use should not conflict any known limitation of the *ideal type*, *model*, etc., or produce empirical contradictions. In this sense, *coherence* becomes a functional correlate of *viability* (von Glasersfeld, above).

With regard to *stereotypicality* in coherence-based conceptions of *scientificity*, we can probably assume that a number of stereotypical lexicalizations and conceptualizations will be necessary to lend to a theory the intersubjective appearance of *coherence* in any case, and, as demonstrated, that at least these three ideas can be shown to have some degree of overlap, or fuzzy borders.

The introduction of the concept of *viability* would however make it possible to approach the provisional construct of *scientificity* again from the perspective of the second, ostensibly non-circular sense of the noun *science* given as "the ability to produce solutions in some problem

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[16]Language must have some *proposition-preserving* function if *proposition* is interpreted as "a statement that affirms or denies something and is either true or false", (Wordnet Contributors, 2010). For example, one of the most basic *proposition* inherent or entailed in any definition of "liquid" (regardless of how one believes the mental construct of this being structured) would be a *denial of the property of dryness*. Observations like this suggest that indeed "Any language is culturally inherited [...] in order to be able to communicate fluently with each other, we must respect traditional meanings, *at least in a way sufficient to maintain the communication value of the language*. [...] An important social function is thus the stabilization of meanings" (François, 1997, pp. 256/257). If we remain within these limits, and thus *coherent* with regard to our larger social environment or anthropological *culture*, we already do accept *propositions* tacitly and derive further ones from them.

domain". We merely need to provide that the intersubjective *formulation* of that solution is a *coherent* one. With regard to the definitions of *science* discussed earlier on, this relates to the frame of reference evoked by understanding *scientificity* in terms of the genesis of "scientific knowledge" or the "practice of science" rather than that of the *ideal types* of scientific "truth".

Viability would become a property of processes rather than concepts – and also a correlate of *coherence*, so that it becomes possible to consider *scientificity* in pragmatic terms.

3.5 Procedural understanding of scientificity

Above discussion raised the question of how *scientificity* becomes attributed to practices and texts so that the problem of *stereotypes* can be construed in terms of conventional expectations of *scientificity*. Apart from philosophical conceptions or "theories of truth" which can be considered *ideal types*, there would be two more components to this which we have hitherto left unconsidered.

One would obviously be the question of the *acceptability* of formations in social reality, which is however more of a feature of *disciplinarity* and will therefore be discussed in the appropriate place. The other is that of the practical approach to problem-solving in the individual's experiential reality. Without consideration for either, there would be no need for any non-classical concept theory as the application of philosophical standards could remain within the domain of informal logic of a *deductive* type (If premise x obtains, then conclusion y follows); this would then constitute an *ideal type*, often in conjunction with a *prototype* (with a person or work embodying the ideal type as its "best example") as the resemblance of something to an *ideal type* needs an *instance for comparison*.

We have however previously *induced* the hypothesis that this is not sufficient, especially when considering the *acceptability* of term formations (2). Very likely it will not be helpful for the other terminological problems stated in the introducing section (*multilingual terminology, subject classification, indeterminacy*) either. They can be *partly* approached within this frame of reference, but not satisfactorily explained.

With regard to thinking about the standards for *viability*, we need to look at how problems are thought to be solved *scientifically*. On this perspective, *scientificity* would rather resemble sense (2) of the WordNet definition of *science* as *skill*. The question then would be which *operations* this skill enables or specifies. With regard to this, we can now recognize that some process concepts have already been listed in Hutchison's definition (*experiment, observation, deduction*) in conjunction with *theory-laden* objectives and stereotypical assertions. The following will look at how such process concepts are themselves reflected in *pragmatic understandings of scientificity*.

Up to this point, we have already introduced discourse material for the purpose of constructing an *operational* or pragmatic view, albeit under somewhat different auspices. For example, *scientificity* could be *negatively characterized* as the imposition of certain *limits* and criteria on one's knowledge production. These would make a work *intersubjectively* reconstructible in terms of (self-imposed or) group standards, as for example Maturana's reflection on what makes statements acceptable to "modern natural scientists" (cited under (1.1.3)) shows. In this case, *intersubjectivity* becomes a *syntagmatic* criterion that could be subsumed under the *formality of language use*. This formality is thought to make *arguments* "context-resistant":

> All expressions are to some degree indexical: their meaning depends on the context. Different people are likely to interpret them differently, thus assimilating an

> idea different from the one that was expressed. However, *some expressions are formulated in less context-dependent way. The resulting lack of equivocation may be called formality. The more formally an idea is expressed, the better it will survive repeated transmissions.* For example, ideas are more likely to be communicated accurately through logic and mathematics than through poetry or painting.
> Heylighen, 1997, my emphasis

However, the interpretation of *syntagmatic formality* remains dependent on the recipient's possession of the *paradigmatic conventions* to decode it[17], which in turn can remain under the influence of *conventions* and *stereotypes* and are in any case partly acquired by the gradual learning of tacit "*foundations*" for observing or explaining, arguing, etc. Or the "recipient" can measure the "accuracy" of the "transmission" (which thus becomes a very questionable idea) against its *viability* in terms of its own goals: "The scientist has, as a rule, a *fairly well-defined framework of goals*. He searches for explanations with a view to predicting and controlling experiential situations", Glasersfeld, 1983, my emphasis. There is also a *negative* aspect to this, which should emerge from the specification.

It is this "framework of goals" that determines what is *allowed to count as "scientific"* if it is shared by two or more persons, and this is what *philosophy of science*[18] can be perceived to formulate and perhaps regulate; whatever falls *outside* of it is seen as inadmissible, again in terms of the group standard so constituted. With reference to the example of the constructivist community, we could say that claims to findings which indicate the characteristics of an "ontological" reality[19] are of the *inadmissible* kind; other communities may apply different and opposing *negative* criteria, which can thus be considered relative and variable.

There are however also *positive* criteria to *pragmatic scientificity*. From a different angle of the same vantage point, *scientificity* can be characterized in terms distinguishing *phases of the scientific process*, which then are named and their relation specified:

> [T]he scientist's task can be seen to consist of **two alternating phases**: the formation (invention) of conceptual structures and the attempt to demonstrate that experience can be fitted into these structures.
> Glasersfeld, 2001a

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[17]"The technical model of communication (Shannon 1948) [generally termed *information theory*, PBN...] established one feature of the process [of communication, PBN...] The physical signals that travel from one communicator to another [... e.g.] *the visual patterns of print or writing in linguistic communication [...] do not actually carry or contain what we think of as meaning.* [... T]hey should be considered *instructions to select particular meanings from a list* which, together with the list of agreed signals, *constitutes the "code" of the particular communication system.* From this it follows that, if the two lists and the conventional associations that link the items in them are not available to a receiver before the linguistic interaction takes place, the signals will be meaningless for that receiver." Glasersfeld, 1989. Observe that this supposedly naturalist precept fits *coherently* into the coherentist epistemology insofar as it *functions* as an argument.

[18]By extension, this also becomes one of the goals of terminology research if one considers it an "applied philosophy of science", as is the tenet of Budin's "systemic terminology" (Budin, 1996b, pp. 19,221,233). Another area that philosophy of science and terminology undeniably share is the *theory of definition* (Hebenstreit, 2007), which is however more concerned with the formulation and articulation of the "scientific" rather than with policing its boundaries and foundations.

[19]S.J Schmidt summarized what he thought was the "most important epistemic accomplishment" of radical constructivism as follows: "constructivism undoes the fixation that all realist/ dualist/ structuralist philosophies share and which can be subsumed in a figure of thought and style which comes in the forms of "there *must be* X .../ X *must apply* to .../ X *must be true for all* ...". It replaces this obsessive-compulsive rhetoric with the figure of speech that runs: "For our purposes, *we can assume* that ... which helps us *achieve* X." (1987, 43/44, my translation). This is not only a readily accessible formulation of the principle but also serves to highlight relation between *cognitive* and *discursive stereotypes*, which, being "stable" or "fixed", *might* become "compulsive" in the extreme. We can however regard this specific statement as a hyperbole for rhetorical purposes.

Thus, the process of "doing research" is itself observed – by the researcher, it can be assumed – and then subdivided according to *functional* categories (e.g. 1. "invention of structures", 2. "demonstration of viability"), which, in the case of the above, can be characterized as *synthetic* (*inductive*) and *analytic* (*deductive*, (1.3.3.1)). Here, the goal of the process can be seen in the *confirmation* of a conjecture, which essentially suggests an *anti-Popperian* view of how science is supposed to work (Glasersfeld, 1996, Glasersfeld, 1995, pp. 21/22; note the *interference* of the negative pragmatic criterion). The evaluation of this claim – beyond what has already been said in (1) – is not the purpose of the present section[20]. Instead, we mean to show that from a distinction like this, further subdivision may be introduced according to differing self-determined and/ or conventional requirements. These distinctions or divisions may even be formulated in a different semiotic mode, for example as a diagram or chart, and are thus not restricted to natural language. If we contrast Glasersfeld's linguistic formulation with the model shown in Figure 3.1, we will find that it operates on a similar premise while introducing a finer subdivision of (sub-)processes. It also stipulates *end-points* (*results*) which are absent from the simpler, linguistic formulation:
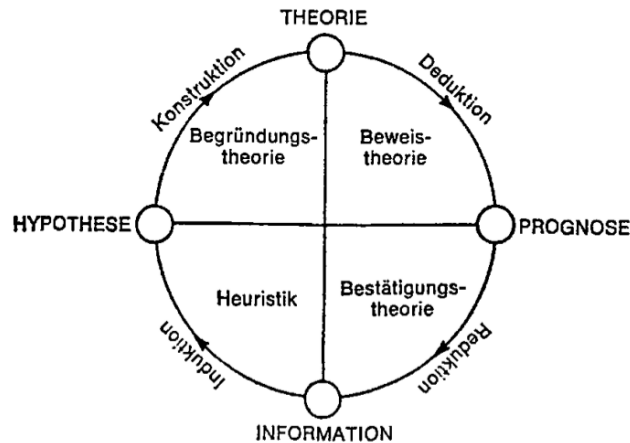
Abbildung 13: Systemtheoretisches Funktionsmodell der Wissenschaftsentwicklung nach Oeser 1976 III: 119

Figure 3.1: Oeser's circular operational or pragmatic model of *scientificity*, as used by Budin 1996b, p. 53. The caption reads (clockwise, inside-out): *theory of justification, theory of proof, theory of confirmation, heuristics.* Outside the circle: *theory, deduction, prognosis, reduction, information, hypothesis, construction.*

The second model could easily be accommodated within the first, although an act of interpretation is necessary to arrive at a tentative mapping of *heuristics* and *theory of justification* to the "the *formation* (*invention*) of conceptual structures", and of *theory of proof* and *theory of confirmation* to "the attempt to *demonstrate* that experience can be *fitted* into these structures". An analysis of process concepts – which is the prerequisite for any such mapping – needs to be

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[20]Neither is the falsification of other's hypotheses the aim of the thesis as an entirety; we rather subscribe to the verificationist perspective on the grounds that it fits the interest of a work that is essentially a case of language- and knowledge engineering. Engineers, technicians and inventors would have a natural interest in proving that their ideas work, rather than the inverse. They also need not be concerned about the falsification of their constructions, as this will be provided by "ontic" reality in any case.

seen as highly subjective, even if one does not believe in a generalized subjectivity:

> The *partition* or *phase division* [of process concepts, PBN] is often *based on our assumptions and attempts to create order and neat conceptual packages for our specific communication or activity purposes.* **Especially in scientific research, different alternatives for conceptual structuring for the same slice of world appear.**
> Nuopponen, 2007, 200/201, my emphasis

On the grounds of this, it could plausibly be argued – as a counter-example to the above interpretation – that *heuristics* forms a part of "demonstrating fit" when it is applied for the purpose of "proof" (trial and error) *rather than* for the purpose of "concept formation" (discovery). Undoubtedly, many other *viable* interpretations are possible beyond these two examples. Some of them could produce an asymmetrical mapping between the models. Considered in this regard, we note that the diagram contains *subprocesses* (*construction, deduction, reduction, induction*) as well as *immaterial entities, ends* or *results* (*hypothesis, theory, prognosis, information*) which are absent from the alternative characterization; they indicate that a "partition or phase division" has been marked in the operational description.

While there will likely be little disagreement with these *positive* and *negative* pragmatic characterizations of *scientificity*, it needs to stated that they are in principle still *underdetermined* as the criterion for *acceptability* or *intersubjective coherence* in social reality is still unreflected. Beyond the basic *operations* that the individual practitioner may consider essential, there remains the question of how *scientificity* – as a property derived from the adjective *scientific* – is socially constructed and expressed in texts:

> The adjective 'scientific' is not attributed to isolated texts that are able to oppose the opinion of the multitude by virtue of some mysterious faculty. *A document becomes scientific when its claims stop being isolated and when the number of people engaged in publishing it are many and explicitly indicated in the text.* When reading it, it is on the contrary the reader who becomes isolated. The careful marking of the allies' presence is the first sign that the controversy is now heated enough to generate technical documents.
> Latour, 1987, p. 33

If the document itself is rendered *scientific* by not being isolated, terms might become so by being *conventional* or "non-idiosyncratic". If a number of *scientific* documents is formulated on the basis of a family of *acceptable* terms, the nimbus of *scientificity* can be seen as propagate down to the terms themselves:

> *The relationship between correctness and acceptability, and their respective impact on the moulding of new terminologies are not yet clearly understood.* [...] Incorrect ones may be readily accepted for no apparent reason, and whereas some of these are as readily replaced, others become impossible to uproot from current usage. On the other hand, *perfectly correct terminological creations that have been spontaneously adopted by a professional community for their originality and transparency are sometimes officially rejected by editors of specialized literature and other language workers*, seemingly for lack of compliance with *more common if uninspired term formation patterns.* [...] Unlike correctness however, the *dynamics of acceptability seems highly unpredictable, almost chaotic. For what is acceptable here or now may not be so elsewhere or tomorrow.*
> Pavel, 1993, my emphasis

If we synthesize the above into our considerations by allowing that personal practices may be constrained by *conventions* and that *scientificity* is partly an attribute that comes to a document when it is either endorsed by a social group (later termed culture/ sub-culture or sub-sub-culture) or when it endorses the social group by replicating its conventionally accepted statements and terms according to erratic-seeming criteria, we have cut right to the heart of the matter of *thick concepts* and *stereotypical constructs* in terminology research. These constructions, in turn, can become argumentatively grounded themselves, in which case they are accessible to *concept analysis*. This analysis *can* include logical and philosophical lines of inquiry, but, as stated, they will not in themselves be a good guide to approaching the "highly unpredictable and chaotic" heuristically. We need a synthesis of the three perspectives (lexical/ *syntagmatic*, philosophical/ *paradigmatic*, operational/ *pragmatic*) to forge a *heuristic* in order to approach the *ideal type* component of *thick concepts* before we go further in our investigation.

3.6 Scientificity as exemplar of thick concept

The following concluding remarks relate to our interpretation of Figure 3.2, a shown on page 81. In what is to follow, each paragraph of the text corresponds to a row or line of the diagram when it is read from the *top to the bottom* of the hierarchy.

Before we can summarize and interpret our findings in this way, we need to recapitulate the loose definitions of *concept* – as *any mental gathering of features indicative of a mental category*, which can be a bundle of logical features and prototype impressions – and of *thick concept* – as *any such bundle which additionally contains an element of value judgment, sometimes expressed stereotypically in terms of culture-based conventions.* In short, *thick concepts* are regarded as "*unities* of fact and norm" (Levering, (1.1.1.2)), whereby *fact* is best understood as an *artifact* in which embodied experience and subjective interpretation converge[21]. Renaissance philosophy and radical constructivism provide a precedent for this view, e.g. in the sense of "congruence" obtaining between in the Vichesian senses of *"verum" (Lat. "truth") and "factum"* (Lat. "that which is made") (Otto, 1979, p. 15) or of "Vico's notions that we can rationally know only what we ourselves have made" (Glasersfeld, 1995, p. 6), which is amplified and adapted repeatedly in Glasersfeld's work. We substitute *convention* (2.6) as a generic term for "norms" for the sake of terminological consistency; although the difference between norms, laws and conventions is disputed in the social sciences and elsewhere, we deploy the term indiscriminately as a *heuristic fiction* of the *sociological imagination* (2). From this perspective, we can interpret *scientificity* as *thick concept* along the lines laid out above.

As noted, *scientificity* may be understood *paradigmatically* in terms of ideas that evoke an *ideal type* (1.4) of the requirements that a practice has to approximate in order to be considered *scientific* and *syntagmatically* by inducing understandings from works of reference that to some extent will reflect such ideas. *Pragmatically*, it can be understood from reflective accounts of the cognitive operations and processes used in the practice of scientific reasoning. These accounts draw either on textual material or on graphical means. As has been argued before, a "pure" or exclusive approach to either the *paradigmatic* or *syntagmatic* end is likely impossible, and an interactive reading will have to comprise *paradigmatic*, *syntagmatic* and *pragmatic* materials, especially if special consideration is given to process concepts which are assumed to assist in the

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[21]Compare Hermans' definition of *convention* in (1.4)

necessary (if subjective) *distinctions* that organize a process into stages or "slices of [experiential] world" (Nuopponen, (3.5)).

Aggregate collections of named distinctions can be said to constitute *models* if they are co-related *coherently*. *Models* which play a prominent role in terminology research (see, e.g. Neubauer 2008; terminological computer models can be seen as a special case where such mental models are "hard-coded" or "translated" within the constraints of formal models) and can to some extent coincide with *cognitive stereotypes* (2.5.3), insofar as the *function* of the *model* is seen in aiding "complexity reduction" (compare Budin, 1996b, pp. 10; 34; 44; 60; 65; 84; there, this purpose is ascribed to *computer models* (10), *system models* (34), *concepts* (or models thereof, if one is willing to insist on this distinction; 44), *models in documentation languages* (60, 65), and *ontological models* that describe the world in terms of *layers* or *levels* (*Ger. "Schichtenbau der Welt"*; 84)). Models are therefore a special kind of *ideal type* and *can* have a stereotypical element. Their composition would best be grasped by assessing *model descriptions* (terms and texts) with regard to the extent to which they are problematized in terms of context or provenance and/ or formulated in terms of informal logic used in (Aristotelian) definitions or other definition/ explication strategies, if their model descriptions deviate from the classical pattern. Here, we are again operating *middle-out* from the *philosophical-paradigmatic* and the *lexical-syntagmatic* ends of the observational spectrum. Specifically, we are looking at the definition/ explanation as specific genre of (sub-)text which effects the construct(ion) of *scientificity* itself:

> *Definitions serve as a major tool in any scientific endeavor* (I do not limit 'science' and 'scientific' to the 'exact', natural sciences) ; they provide access to the *concepts that form the constructing elements of a theory.* Consequently a well defined, unambiguous terminology is generally considered the basis of scientific work. Rahmstorf takes that idea one step further, arguing that "*[t]he primary scientific achievement of a good definition is the new conceptual construction*" (1993 : 47).
> Hebenstreit, 2007, p. 198

This paradox can be somewhat alleviated by introducing the provision that "scientific terminology is not only *field-specific* [...] but also *theory-bound*" (Budin, Lauren, cited ibid., p. 204, my emphasis), and sharply distinguishing between aspects that are *subject-specific* as features of *disciplinarity* on the one, and aspects of *theory-boundness* (or rather: *theory-ladeness*) as features of *scientificity* on the other hand. This entire section has dealt with aspects of *theory-ladeness*, which were explained in terms of the assumptions that might give them away. The notion of *disciplinarity*, on the other hand, is heavily invested in *conventions* and families of stereotype construct that emerge as parts of traditions and are therefore not *deducible* from *paradigmatic* ideas of *scientificity*, although these latter can become stereotype-bearing themselves if they are adopted by a social group, sub-(sub-)culture, or discipline as a default preference. As *disciplinarity* can be seen to play a key role in both terminological subject delimitation and term description, two separate chapters will be dedicated to its modeling.

Definitions will be accompanied by some co-text that expresses justifications, evaluations or the like. The three examples we have selected are of ideologies that may be seen to ground these evaluations and express preferences for certain types of explanations over others (Weber, (1.3)). These were *naturalism*, *foundationalism*, and *coherentism*, whereby it can be inferred that :

- *naturalist* bias will tend towards explanations which make reference to the findings and terminology of the natural sciences,

- a *foundationalist bias* will prefer explanations that evoke (e.g. rationalist or empiricist) philosophical positions, arguments and terminology,

- and a *coherentist bias* will tolerate any explanation that is either consistent with the other "constructing elements of theory" (terms and definitions; Hebenstreit, above) or (at a minimum) does not contradict or invalidate another element. The precise origin of the element is here less relevant.

However, such explanatory styles are not likely to be pursued in their pure form, so that overlaps between them can be seen as almost unavoidable. Some hybrid positions may be seen as conventional or accidental (in short, as what will later emerge as *contingent* functions of *disciplinarity*), while others may be motivated by the objective of strengthening a certain position against counter-argument from another by *anticipating* their counter-argument and perhaps to by enlisting additional – more or less willing – "allies" by subverting it (Latour, in (3.5)). There is no reason to assume that this behavior should be less pronounced in the human sciences than in the "hard sciences", although disciplinary *conventions* may differ significantly (Hunston, 1993). Establishing these *ideal types* as hard-and-fast criteria or "reference values" is however at least problematic; the picture becomes even muddier if one considers them in a pragmatic context (3.5) of subject specialists describing (especially cognitive) processes. Nevertheless, these *paradigmatic* aspects retain some usefulness as criteria *in conjunction* with the dimension of *disciplinarity* to be further developed. They can be seen as the *prototypes* of *scientificity*.

As can further be seen in Figure 3.2, there are *two directions* from the issues in question can be approached; in the preceding, we have taken the path of "top-down" *deduction*, i.e. reasoning from the superordinate to the subordinate, or from the best example/ *prototype* to the fringes of the category. Alternatively, there would also be the path of *induction*, which however has to start from particular examples, such as the co-texts of the term *terminology science* discussed in the last chapter. It would then work from the observation upwards towards wider generalization. If we consider the idea of *theory-ladeness per se*, it should become clear that we need not only the object of observation but also the appropriate "theoretical lens" in order to *discern* the object in the first place. For the present case, we can assume that the perspective in question resides in the following capabilities with regard to *observing scientificity*:

- an understanding of conventions, at least insofar as it enables us to perceive that constructions of *scientificity* are partly (proto-)conventional; this understanding can be best acquired by exposure, especially to contrasting conventions;

- an understanding of informal logic, in order to read classical definitions and hierarchical informal classifications; this should be provided by a knowledge of classical terminology (Wüster, 1985; Picht and Draskau, 1985; Sager, 1990);

- an understanding of syntagmatic stereotypes, which can only be acquired by exposure to textual material and contrastive reflection.

To a large extent, we can conclude this exercise on the note that *ideal types* and logical rules in themselves are – though they show some combinatory flexibility – *not sufficient* for the understanding of *thick concepts* in the human sciences and therefore for terminography in the field of philosophy. They might give one a partial understanding of *scientificity*, or *theory-ladeness*, but

not necessarily of *disciplinarity*, which is as integral an element of understanding a field as any of the issues here discussed. Given our insight from the analysis of definitions in WordNet, the noun *science* is seen as synonymous with *scientific discipline* (3.2), so that an understanding of the *subject-specific* should be added to the foregoing considerations in order to sufficiently equip the researcher to *perform* terminology description. For this, we require two additional insights: an understanding of what the performance of terminology description in the area of the human sciences and philosophy entails, and an operational understanding of *disciplinarity* derived from number of empirical test cases.
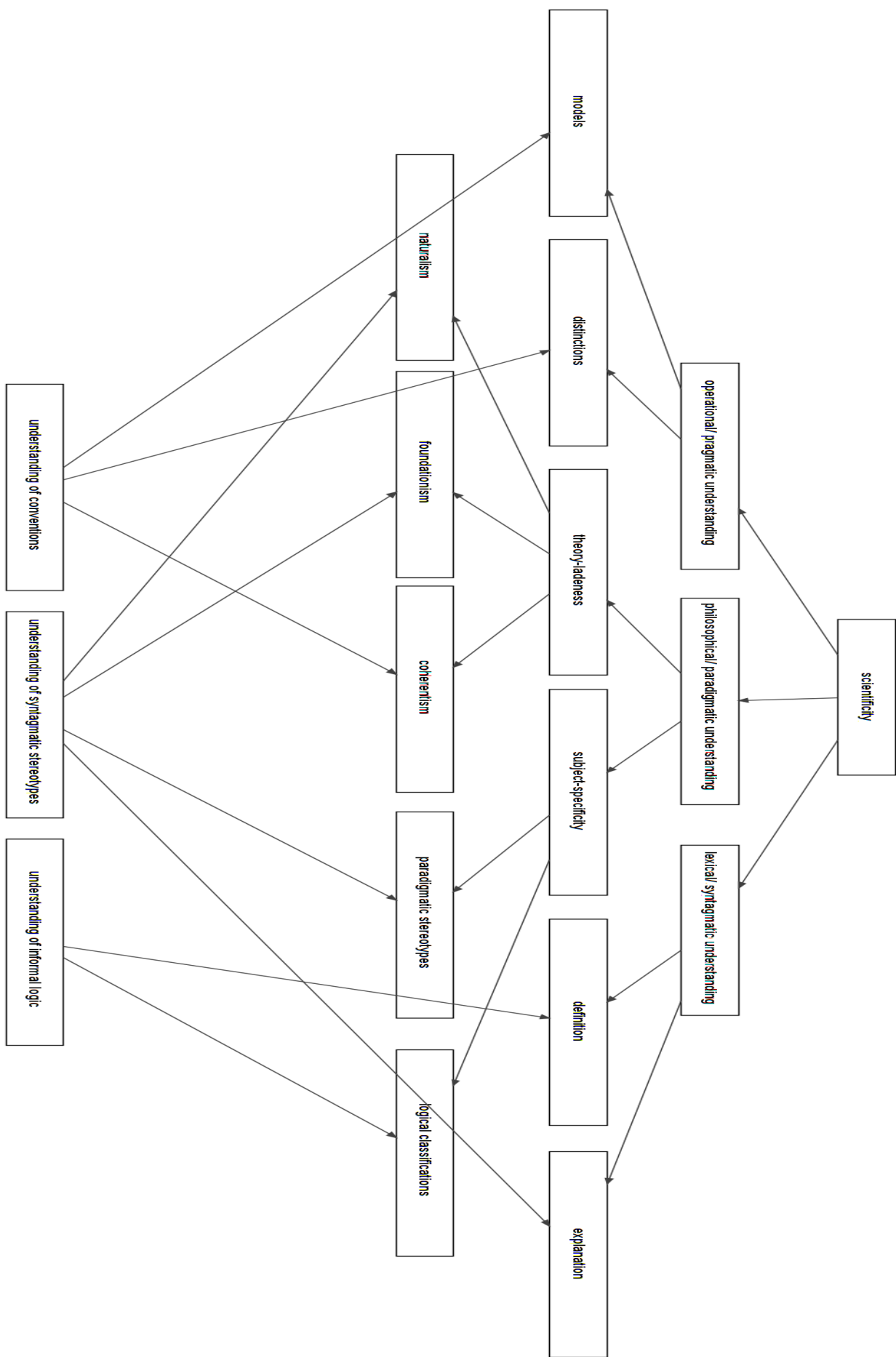
Figure 3.2: Scientificity as *thick concept* requiring three types of understanding.

4 Principles and approaches of philosophical terminography

Introduction

In the preceding chapters, we have reflected on topics which can be comfortably grouped under the umbrella of concept theory. In the context of terminology research, this can be seen as a form of *meta-theory* or as a family of related philosophical issues. We have for example treated a number of traditional *dichotomies* inherited from linguistics together with some assumptions on the nature of the terminological observer in the context of *concept analysis* in Chapter (1). There we have introduced a reduced working definition of concept and the distinction between *thick* and *general concepts*. We have found that avoiding a dogmatic concept theory and adopting an *interactive approach* was beneficial to our project.

In Chapter (2) we have contemplated the role of the *social*, *cognitive* and *discursive* entity *stereotype*, which we have obtained by turning our analytical method back on the discourse of terminology research in a multilingual context. This was a step by which we have implicitly made a distinction between what we call the *rational* and the *contingent aspects* of term formation. The latter are commonly entailed by concerns for *acceptability* or *appropriateness*. *Stereotypes* – whose function is analogous to that of *prototypes* in sociocognitive terminology – were seen to contribute to the idea of *thick concept*.

Going deeper into this idea, we have elaborated a schematic model of the *thick* concept of *scientificity* to account for some factors of *acceptability* and *appropriateness* that could be formulated in terms of philosophical traditions and the *ideal types* of argumentation that emerge from them. One concept that could be proposed for describing them in terms of the ideal-typical notion of *scientificity* would be the constructivist idea of *viability* (3.3.3).

So far, we have not concerned ourselves with the precise nature of our enterprise in terms of what is commonly considered in terms of another *dichotomy*, i.e. the *dichotomy* of *theory* and *practice*. This relationship needs to be evaluated more closely; in this chapter, we would suggest the term *praxeology*, which denotes. a theoretical formulation of practice in terms of a "theory of action" (Vidal, 2007). This provision is related to the idea of *interactive concept analysis* (1.4 ff.) and seems to originate in the context of pragmatic philosophy, which could be seen as a correlate of practical philosophy. By way of explanation:

> Praxeology belongs to the pragmatic tradition and thus emphasizes that concepts - and the world - must be understood through and elucidated in terms of human activities and practices. [...] Praxeologists stress that good conceptual and ontological analyses proceed by (and are presented in the form of) careful analyses of particular examples or cases. They emphasize the situatedness of the philosopher in the world.
>
> Routledge Contributors 2000, pp. 705/706

An example for the application of this principle could be seen in the idea of *augmented intelligence* (Engelbart, 1962) to which this practical theory or practice of theorizing can be seen to contribute. In this sense, our use of the term is unrelated to the "objectivist" idea associated with the liberal Austrian School of economics (Garrison, 2008, p. 211) denoted by the same term.

The outline of what we call *philosophical terminography* needs to be constructed before we can return to the construction of *disciplinarity*. If this were not the case, then the purpose of constructions like *scientificity* and *disciplinarity*[1] would not emerge. For one, they are replacements for certain requirements – common to both traditional and sociocognitive terminography – which are not satisfiable in the field of the human sciences, and which are therefore to be reviewed against the outline of a proposed practice specific to the field.

Secondly, some reflection on the ideas of theory and practice is indicated. This is best situated in the context of this chapter, as a reconsideration of theory and practice can be seen to be fundamental to the *regenerative* idea which posits that *theory construction itself should be regarded as a practice* and thus as open to a discussion of its *principles*, *approaches*, and *procedures*. Writing in the pedagogical and therefore also *heuristic* context of terminologist training, Rogers and Korkas observed that beginning practitioners or learners of terminology research appeared to see the practice and theory of the discipline as vaguely unrelated or entirely contingent. Against the background of this observation, they posited that:

> *The relationship between theory and practice is one which has implications for both, i.e. it is a bi-directional relationship.* Theory can impact on practice in many ways, e.g. by providing consistent principles which can be applied in order to solve problems arising in practical work. And practice can throw up new questions for theory to answer. [Instead of ...] the binary opposition [...] theory and practice, we would prefer to think in terms of a set of interrelated elements: principles, approaches, and procedures.
>
> Korkas and Rogers, 2010, 123/127, my emphasis

While the context of the observation differs somewhat from our conception of *theory construction as practice*, the idea of the "bi-directional relationship" is in principle applicable to our endeavor. The same can be said for the dimensions of *principle*, *approach*, and *procedure*. However, a finer specification of what exactly the bi-directional relationship between the two poles of the continuum should be seen to consist in is on order. The above authors defined the dimensions as follows:

1. *Theory* "can be understood as a coherent set of principles" (Budin, cited in Korkas and Rogers, 2010, p. 127). This points to a *coherentist* and/ or *foundationalist* conception. Depending on one's preference in terms of *scientificity*, it may be defined differently, but for our purposes the formulation is perfectly acceptable.

2. *Principles* "are task-neutral and comprise the basis for systematic work of a theoretical or practical kind [... given the example of Wüster's GTT] principles may be *more or less*

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[1]It will become clear in the following that while *scientificity* can be seen as a simplified model of a limited set of epistemic beliefs and expectations, the *thick concept* of *disciplinarity* is quasi-ontological insofar as it expresses beliefs about sectors of the discursive universe – or rather the *discursive multiverse* – which cannot be modeled without clarifying a number of second-order beliefs (or beliefs about beliefs) precipitated on the idea of *worldview* from which reflections on practice (or *praxeologies*) also flow.

relevant depending on the application" (ibid., my emphasis). As will be seen, *principles* are relative in that they serve the purpose of orientation and are therefore not completely "task-neutral", at least in our interpretation. This may be justified by stating that they do determine which tasks *can* be done. Therefore, there is a fuzzy overlap with *approach*.

3. *Approaches* "are not neutral, but indicate an orientation [...] An approach can be seen as a way of tackling a particular task", (ibid, 127);

4. *Procedures* "are even more concrete than approaches. [... and ...] indicate actions for executing particular sub-tasks related to an overall orientation and task", (ibid, 128).

With regard to what there is to follow, we should make a distinction between two dimensions of *theory* along the lines of the *paradigmatic/ syntagmatic* continuum and state that a "theory" as a "coherent set of principles" can either indicate a chain or set of *schemes* that a person has for the purpose of solving problems (this sense also emerges from ibid, p. 130 ff.) *and/ or* a *codified* document (e.g. a specialized dictionary or monograph) which seeks to outline or describe the operations, entities or relations expressed by the terms that the author of the document deems to best exemplify the *scheme* that they *mean to express.*

The notion of *scheme* is a suggested *import* from the epistemology of radical constructivism which we propose to describe the relation between these two senses of *theory* and their *regenerative mutual modification* in terms of a *circular relationship.* However, what should we understand by a *scheme*? We now will produce a definition which at the same time will serve as an example of what this discussion is about.

The concept denoted by the term *scheme* stems from Piaget's *genetic epistemology*, which in essence can be seen as an approach to cognitive psychology[2] that believes that "'[T]he study of the development of mental functions is [...] the key to explaining their 'mechanisms in the finished state'[.]" (Beaugrande, 1994, § 10). Alternatively, it could be seen as "an analysis of how a cognizing agent begins to construct what he or she will ultimately consider reality" (Glasersfeld, 1982).

It is difficult to define the terms *scheme* or *action scheme* (these can be considered synonyms via *compression*, whereby the *determinant action* is elided from the noun phrase *action scheme* and only the *nucleus* remains; Sager, 1990, pp. 72/73, 1997, p. 30) for a variety of reasons. For one, the *nucleus* is a loan translation from the French *scheme* which – according to von Glasersfeld's interpretation – has often misleadingly been translated as *schema* (Fr. *schéma*). This lexical choice is considered to have distorted its meaning into that of a "static diagram", whereas it were better understood as a "scheme of action and operations" (Glasersfeld, 1995, p. 75). This phenomenon makes a *semasiological* approach to the implied concept difficult and is reminiscent of one of the perennial problems of terminography (3, § 2).

Onomasiologically approached, the *category* suggested by *scheme* can be seen as subject to the "fuzziness" of *process concepts* (Nuopponen, in (3.5)) and as *prototypically* structured. An analogous case can be seen in the study of terms denoting activities like "blotting"; Temmerman states: "As blotting is an activity (procedure) it was predictable that in order to understand the category one would need to know of several steps which structure the intracategorial understanding [...] The steps in how to perform an activity is predictably essential information for all the

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[2]The adjective *genetic* here should be taken to indicate "developmental", perhaps "evolutionary" (ibid.) in a sense unrelated to contemporary genetics.

activities which are of specific relevance to the domain of the life sciences" (Temmerman, 2000, pp. 106; 121).

However, *scheme* is an *immaterial object* (Picht, 2008) and thus circumscribed by an extension of further *immaterial objects* which may in turn be logically (intensionally) defined in relation to the *indeterminate* co-/sub-/ or superordinate. Examples of such terms include the formations *assimilation, accommodation, perturbation, equilibrium* as the appear in co-texts like: "Piaget's notion of scheme is not a simple affair. It cannot be properly understood unless one realizes that *assimilation* and *accommodation* are presumed to be subjective and depend on unobservable states in the particular cognizing agent" (Glasersfeld, 1995, p. 66). More examples are to follow below. This phenomenon should make the identification of a central *prototype exemplar* rather difficult as the *prototype* can only be the conventional sense of a term *defined in relation to a subject field*, a practice which masks an underlying circularity. This problem will be discussed in Chapter (6) in the appropriate context of subject delimitation.

Inductively, *scheme* can be explained *both* in terms of the analogy of *biological reflex* (Glasersfeld, 1995, p. 64) *and* the alternative analogy of the artificial, perhaps electronically or hydraulically implemented (negative) *feedback loop* (Glasersfeld, 1995, p. 155, Glasersfeld, 1981; these are versions of the same text). Both analogies can however be regarded as partially flawed if one considers the constructivist interpretation of *scheme*; for example: "Action schemes were [...] tacitly interpreted by many readers as stimulus-response mechanisms" which apparently produced a misinterpretation (Glasersfeld, 1995, p. 56).

The relatively most enlightening way of defining the concept is defining *operationally* and with reference to *purpose*[3]. This way, we come by a workable list of intensional and extensional characteristics together with *encyclopedic information*. The following specimens are drawn from a list of semi-random and intellectually prepared corpus examples:

(4.1) [...] I have come to specify the *three parts* of schemes as follows: 1. [*Perceived situation,* ibid, PBN] *Recognition* of a certain situation; 2. [*Activity*] a specific activity associated with that situation; 3. [Beneficial or *expected result*] the expectation that the activity produces a certain previously expected result (Glasersfeld, 1995, p. 65)

(4.2) Regardless of whether a scheme is implemented in a *reflex* or *sophisticated arrangement of cognitive structures*, it consists of *three parts* [those enumerated above, PBN] (Glasersfeld, 1995, p. 153)

(4.3) However, the same *inductive principle* [for eliminating 'life-threatening perturbations', ibid, PBN] is also inherent in Piaget's *concept* of 'scheme', but there it is a *principle of cognition.* [...] (Glasersfeld, 1995, p. 153)

(4.4) They [schemes, PBN] are part of an *instrumentalist theory of learning* and incorporate the processes of *assimilation* and *accommodation* (Glasersfeld, 1995, p. 153)

(4.5) From that perspective [the instrumentalist, PBN], *cognitive structures, i.e., action schemes, concepts, rules, theories, and laws*, are evaluated primarily by the criterion of success, and success must ultimately be understood in terms of the organism's efforts to

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[3]A finding in terms of which *scheme* can be construed as similar to *activity categories* like *blotting* which display fuzzy extensional characteristics, Temmerman, 2000, pp. 82/83.

>   *gain, maintain, and extend its internal equilibrium* in the face of *perturbations.*
>   (Glasersfeld, 1982)

(4.6) On a higher *level* that Piaget calls "*operational*", there are *schemes for the construction of schemes.* They require the *actor's awareness of the structure of its own schemes.* This awareness is the result of "*reflective abstraction*"[.]

(4.7) *Analogously to a learning cybernetic system* [equipped with a negative feedback mechanism], a living organism must be able to experiment and to construct, by *inductive learning from experimental outcomes*, a repertoire of *schemes* that enable it to maintain its sensory perceptions within an acceptable range of the reference values. (Glasersfeld, 1981)

We can now define scheme as follows:

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scheme, *n.* Also *action scheme.* From French *scheme*, a term which was coined by the psychologist Jean Piaget. In the context of genetic epistemology and radical constructivism, it denotes a structured cognitive process which embodies a program for achieving goals and/ or eliminating perturbations on any level of complexity, ranging from the unconscious level of reflex to sophisticated activities. A scheme involves three sub-processes: one for recognizing situations and linking them to recalled previous experiences, one for calling up the desired goal to be archived in relation to the recalled situation, and one for selecting an existing action and reaction (which can reside in another scheme) based on the recognized situation and goal. A scheme can be seen to work inductively and resembles a reflex (or fixed reaction triggered by a stimulus) on the one, and a feedback loop (a control device intended to maintain a reference value by triggering action in response to fluctuation) on the other hand. Schemes can be hierarchically nested. It is possible to construct a meta-scheme for the construction of other schemes. In radical constructivism, schemes have been interpreted in an instrumentalist way because they are seen to produce results in the world of experience, but not a representation of reality. They are considered to be repeated on the grounds of their success in rather than because of their accurate depiction of that (experiential) reality.

See also: *assimilation, accommodation, equilibrium, perturbation*

This list of properties stated by Rogers and Korkas above is largely schematic representation of a possible *scheme* for terminology research. However, it provides a starting point for considering the relation of practice and theory in *philosophical terminography*, which we intend to model as a "regenerative" or "augmentation" practice for a constructivist theoretical terminology in analogy to "second-order cybernetics", insofar as "Radical Constructivism [often equated with second-order cybernetics] represents [...] a recursive application of cybernetic principles to cybernetics itself" (Wenzel, 2000, 43, my translation).

Why this should be so emerges from above examples, especially the idea that *schemes* should be thought to resemble feedback loops and to occur in biological systems (including humans) and mechanical devices alike. The central idea is that a *scheme* should be able to *control or describe themselves* by bringing forth a meta-scheme.

The relation between "theory as problem solving" and "theory as codified product" can be seen as analogous to this way of thinking. It can also be construed in terms of the engineering metaphor that is a prominent feature of procedures for terminography. Taking the analogy to its full extent and applying it to terminology research, the result would be a "second-order

terminology" where terminological practices are deployed for the purpose of building stronger – i.e. more expressive and flexible – theories of terminology by first recognizing and modifying an existing *scheme* in order to bring forth either a *sub-scheme* or a *meta-scheme.* The result of this *reflective abstraction* would then be *codified* as this is possible by applying the *schemes* to one another.

From the standpoint of an (unreflective?) practice, the implications may seem trivial; after all, constructors of theories in similar fields have been known to employ techniques of knowledge management that resemble terminological records, e.g. cross-referenced and indexed note collections, for times immemorial (Wilss, 2011). Alas, these techniques are too seldom made available or formulated for discussion and problematization. If we introduce the requirement inherent in the idea of *praxeology*, i.e. that theory should as far as possible be *continuous* with practice, decidedly non-trivial problems begin to rear their head. This can be seen in a closer comparison of the origins and relationships of the *prototypical* first- and second-order cyberneticists[4]. This is also an analogy that will be found helpful later on, when we examine the engineering metaphor in practical cognitive terminography itself (5.4). As for the basic problem, we note that:

> They [the second-order cyberneticists] began with the *recognition that all our knowledge of systems is mediated by our simplified representations – or models – of them, which necessarily ignore those aspects of the system which are irrelevant to the purposes for which the model is constructed.* Thus the properties of the systems themselves must be distinguished from those of their models, which *depend on us as their creators.*
>
> An engineer working with a mechanical system, on the other hand, almost always know its internal structure and behavior to a high degree of accuracy, and therefore tends to de-emphasize the system/model distinction, acting as if the model is the system. [...] A second-order cyberneticist working with an organism or social system, on the other hand, recognizes that system as an agent in its own right, interacting with another agent, the *observer.* As quantum mechanics has taught us, *observer and observed cannot be separated,* and the *result of observations will depend on their interaction.* The observer too is a cybernetic system, trying to construct a model of another cybernetic system.
>
> Heylighen and Joslyn, 2001, 2/3, my emphasis

A "second-order terminology research" might as well start from the practice of formulation or codification, where we construct a model of the system by applying a model of the system to *itself.* Here, we need to account for the consequences of *subjectivity* ((1.1.3), (2.5.5.2)) and the epistemic function of models which determines to some extent what *can* be theorized. In the previous chapters, we have already started with entity concepts (*stereotypes*, *ideal types*, *prototypes*). We are now proceeding to activity or process concepts (*schemes*). In this context, it bears repeating that *thick concepts* occupy some *hybrid position* between these. Experimentally, we shall attempt to coordinate the idea of hierarchies of process (*theory*, *principle*, *approach*, *procedure*, whereby the first two should be understood as processes of *theory construction* and *principle identification*,

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[4]The analogy seems to be a fitting one because this science is – unlike most – one whose interest is not to be understood in relation to a particular object but amounts to the study of "the abstract principles of organization in complex systems. It is concerned not so much with what systems consist of, but how they function. Cybernetics focuses on how systems use information, models, and control actions to steer towards and maintain their goals, while counteracting various disturbances", Heylighen and Joslyn, 2001, p. 1. Like principles of organization, a specialized vocabulary or *a terminology* (2.3.2, § 1) is *ubiquitous* ("the language and ipso facto the specialized jargon belong to everybody", Wijnands, 1993, p. 167) and should lend itself to observations along similar lines.

i.e. *worldview construction*) with the embedding of *schemes* in the *conceptual system*.

In terms of *principles*, the first question to ask would be about the relationship between conceptual structure and knowing individual. For this, we again need to make a distinction between the system and the model which can be expressed in terms of subsequent bipolar constructions. Firstly, these would include a concept-theoretical distinction between *concepts* as mental constructs *and concepts* as simplified models of them associated with linguistic representations. In our case, this view needs to accommodate a model of individual knowledge and cognitive goals within the two-worlds notions of structuralism (*paradigmaticity* versus *syntagmaticity*) *and* information theory (*signal* versus *meaning*) together with a model of the hypothetical constructs that mediate the partial translation of the one into the other.

Reduced to a question of practice – i.e. of the basic cognitive or linguistic operations needed to achieve this within the constraints of the model – the desideratum turns out to be a *model* of the *operations of formulation and interpretation*. As these operations can be seen to be goal-directed, we might ask about the goal-concept parts of the *action schemes* that govern the translation between system and model or the partial codification of the model. This leads to a framing of the cognitive and linguistic operations in terms of *approach*.

Since both conceptual structure and codification are very abstract concepts, the last question to ask would be how either is reflected in a particular bundle of *procedures*, and to what extent a recombination of procedures might be needed to fit both the *principles* and the *approach* in order to arrive at an outline of the *practice of philosophical terminography*.

4.1 Principles

In the following sections, we are going to clarify our own epistemological or ideological "commitment" to assumptions that we hold with regard to the likely *situation* that anything amounting to a *philosophical terminography* would be practiced in. This is tantamount to the choice of a *model of ourselves as observers* and reiterates our cognitive interest at the same time. Even those who – like Gerhard Budin (1996b, 22, my translation) – object to the idea of radical constructivism as an epistemology for terminology research *per se* should find it acceptable as position in an *environment of maximum uncertainty*; here, its perceived weakness turns into an asset:

> Radical constructivism wants to dissolve *ontology completely into cognitive science and the philosophy of language*, as it takes no interest in the world-in-itself, only in the *cognitive world we create[.]*

Obviously, when we theorize about *concept formation* in a *subject* (as a field or other person, see Main introduction, p. ix ff.), we do not want to be held to task for producing a realistic description of things we cannot *represent*[5] because they either belong to another person's internal *conceptual system* – which cannot be accessed – or to a collective entity too large and diverse to be "realistically" described in terms of "concept formation" since it does – and cannot – "think" and "form concepts" in the same way that an individual person thinks and forms concepts.

Experience should provide support for either claim. We will however forgo any discussion of this aspect as it strictly speaking amounts to engaging in metaphysics or ontology, which are

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[5]Here, *representation* should be taken in the sense which posits an iconic relationship - no matter how distorted or qualified - between a person's concept and a reality thought to exist independent of it, and thus in the sense of (Ger.) *Abbildtheorie* (Schmidt and Gessmann, 2009, , Abbildtheorie) which is normally to be avoided (3.3.3).

precisely "those aspects of the system which are *irrelevant* to the purposes for which the model is constructed". Whether our models accurately represent some observer-independent reality need not be of interest to the development of a *regenerative technique of theory construction*. Its goals entail that even "erroneous" interpretations can positively contribute to the overall *viability* of the effort (5.4.1); in fact they must, if we assert that *indeterminacy* is the experiential correlate of a negotiated ignorance arrangement that keeps science as social institution working. Nobody can have a deep working knowledge of everything (4.2.2.2); rather, we are trying to become hypothetically aware of our own "internal workings" (1.4.1) for the purpose of formulating *approaches* and *procedures* that need only be *viable* in terms of the *principles* from which they are derived. The particular combination is to some extent arbitrary and needs only to be proven *viable* in the world of experience by demonstrating some form of implementation. The theory of *viability* holds that said implementation in the world of experience functions as a built-in corrective as a clash with "reality" will lead to the adjustment of the conceptual structure, although it will not convey an improved "picture" of that reality (Glasersfeld, 1982).

Given this, which *principles* should be taken into account for the model of the terminographer's "inner workings"? Given the speculative nature of the modeling task, we should be first concerned with mapping *boundaries* and *constraints* and then explore the *space within which we can move*. The *principles* that constrain the development of the practice of *philosophical terminography* – rather than the theory, which is so to speak free to seize on any useful explanatory concept that can be associated with the terms that the practice can detect – can be tentatively characterized as:

1. All knowledge of philosophical conceptual entities has – according to the constructivist postulate – to be acquired from *interaction* with texts and discourses and the active construction of understanding;

2. It shall be taken to be impossible to extract "what the concept producer actually meant"; terminographers – who are also text interpreters – act as *information producers*, not as *information processors* (Riegler, 2007); the information they produce (in-)forms their *worldview*, of whose overall extent they need not be completely aware;

3. Those components of *worldview* which play a role in subject delimitation and term description can be considered the *thick concepts* of *scientificity* and *disciplinarity*, which are in the following considered in their role as *meta-schemes*. However, we only make a provision that they act as controllers of two *action schemes* (see below) for discourse analysis (or interpretation) and discourse production (synthesis, which will be operationally described in the following) that are integral to the practice of *philosophical terminography*:

   a) the *text world model*, which is used in the *codification* and *interpretation* of discourse in accordance with some interpretation of *scientificity* or analogous *ideal type* and *disciplinarity*, whose role in predictive simulation is yet to be investigated;

   b) the *discourse-world model*, which works analogous to the *text-world model* but involves mainly the *scheme-like* aspects of the *thick concept* of *disciplinarity* as they relate to the shared culture, knowledge and values of a recipient audience and the information needs of this audience, which may be the reverse or inverse of this cultural knowledge. In short, the *discourse-world model* implicates tacit, implicit, or background knowledge.

The difference between the *worldview* proper and the more specialized, communicatively oriented models of some of its aspects will be found to be the distinguishing criterion that sets *philosophical terminography* apart from the general practice of *philosophy*. It should best be understood in terms of the distinction of system and model, and there in the context of a "control hierarchy" from the generic to the specific. Both belong to the *paradigmatic* spectrum. This is the sphere of *theory*, *principles* and *approaches* where the boundaries between these concept to some extent become blurred. The lossy translation into a *syntagmatic* model is an aspect of *codification*, which is controlled by its own set of *schemes*. This will emerge in the discussion of *procedures* from an engineering viewpoint similar to Heylighen's observation of how engineers treat systems and models in Chapter (5). Let us first discuss two *principles* – or elements of *theory* – which are coherently related: the principle of the *active construction of knowledge* and the principle of *semantic uncertainty* which follows from it.

4.1.1 Active construction of knowledge

If we seriously consider the idea that meaning and knowledge cannot be *transmitted*, but only modeled by modifying, breaking up, or recombining conceptual building blocks (such as the "*action schemes, concepts, rules, theories* and *laws*" in Example 4.5) already present in a particular observer's *conceptual system*, the idea of *philosophical terminography* must start from the *constructivist postulate* (Riegler, 2007). Formulated in full, the postulate entails that "knowledge is not passively received but actively built up by the cognizing subject" (Glasersfeld, 2004); in short, *knowledge is actively constructed*. This is similar to the idea of "*conceptual engineering*" – based on another engineering metaphor – or that of "*maker's knowledge*[6]" which is suggested as integral perspective of the *philosophy of information*:

> [E]mpirical knowledge itself develops through the constructions of our information about the world [...] Too much ink has been spilt on philosophy as *concept* analysis. The alternative view, that philosophy is [...] engaged with *creating, refining, and fitting together our conceptual artefacts* in order to answer *open questions*, that is, questions that are not answerable in principle empirically or mathematically, has received too little attention.
> Floridi, 2011, pp. 293/294

If knowledge cannot be transmitted, then all knowledge of conceptual entities is *maker's knowledge* and constructed by *reflective abstraction* from the observer's experience (Example 4.6). This also reflects and explains the constructivist character of (second-order) cybernetic modeling and vice versa[7].

The *constructivist* or *maker's knowledge postulate* by no means contradicts the idea of *interactive concept analysis* (1.4.1) but rather amplifies the observation that while interaction takes place when setting objects in relation to one another, it is the *maker* who "causes" constructs to "interact" *by* setting them in relation. On the strength of this argument, one might also justify the observation that one might generate quite *viable* explanations, explications or definitions of

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[6]It is also analogous to the *Vichesian principle* (3.6) which recurs in Floridi's text (ibid, p. 300).

[7]"Cybernetic epistemology is in essence constructivist: knowledge cannot be passively absorbed from the environment, it must be actively constructed by the system itself", Heylighen and Joslyn, 2001, p. 21; on the reverse: [T]he meanings we attribute to words and phrases, and to whole speeches and texts, are meanings, or built up of meanings, that we ourselves have generated in our own experience. They are the result of "self-regulation" – and the study of self-regulation is an integral part of cybernetics", Glasersfeld, 1992. See (4.3) for an understanding of *schemes* in philosophical terminography as self-regulating system.

concepts (5.3) which strictly speaking reside in an unknowable ontic world. On example for an attempt to model the interaction between such *black box* systems is depicted in Figure 4.1 (on page 91).
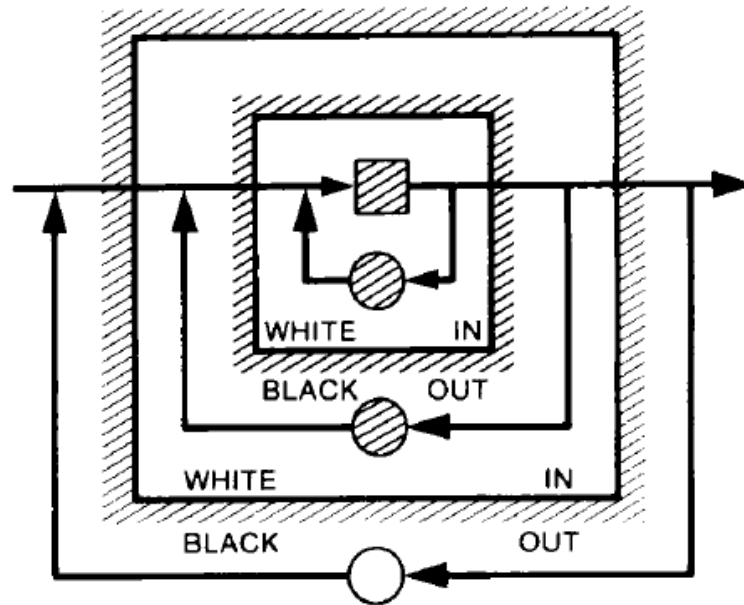
Figure 4.1: Interaction of two *black boxes* (objects with unknown internal mechanisms) generating a *white box* (designed object whose mechanism are *"maker's knowledge"*). From Glanville, 1982, p. 5.

By exerting pressure on a conceptual *black box*, e.g. by comparing it to another, at least a working description that can become part of *scheme* might be achieved, providing that it does not produce failure[8] in the world of experience. That a description thus produced does not present the ontic reality of a material or immaterial object or an exact blueprint of a concept should be taken as axiomatic. Also, the "transparency" thus archived must be considered *private* to the *observer who takes part in the interaction* (Glanville, 1982, p. 4) and depends on the *interaction*, or the *process* of the construction of *maker's knowledge.*

This especially holds for the conceptual descriptions of what is to be termed *philosophical terminography* in the following. However, it might also be relevant for all forms of concept- (or *category*-) oriented terminography which draw their definitions from any form of discourse *other than* the literal blueprints of actual manufactured objects, a case in which model and system are indeed (largely) identical[9] ((4), (5.1)). This should also address the problem of *indeterminacy* in terms of *explaining indeterminacy* in functional terms (3), although no particular conjecture on the factors shaping this perception has been provided yet. At the most, the above might lead to the scandalous assumption that meaning is both private and dependent on induction from

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[8]In terminology use, for example, the "failure" of a term would mean that it attracts destructive criticism or fails to achieve any uptake on part of a community of language users; in other words, that the term lacks *acceptability* (3.5) and/ or *appropriateness* (2.5.5.4).

[9]In this particular case, we agree with Gerhard Budin who stated that "The general theory of terminology formulated by Eugen Wüster (1974) does not loose its validity, but is downgraded to a special case in the entire system [of theoretical terminology] which describes a possible approach or *ideal scenario* within the broad spectrum of reality between discourse, cultural plurality, interdisciplinarity, information explosion, conceptual dynamic of the sciences, the progressive application of electronics to communication and the complexity of everyday life [Ger. *Lebenswelt*] with its challenges and specific requirements for purposive action and problem-solving", Budin, 1996b, 125, my translation.

particular cases, as it has been suggested in Example 4.7.

4.1.2 Semantic uncertainty

That this drastic view is *unpopular* (Glasersfeld, 1991a) can be explained by its implications. The idea that only that which has been experienced or made can be understood invalidates practically any attempt to portray knowledge or meaning as something that can be picked up by contact with the ontic world (a belief subsumed by the phrase *"illusion of encoded information"*, Glasersfeld, 1995, pp. 115/116) and makes all questions of *intersubjective* – and even *subjective* – meaning "open" or philosophical questions.

It amounts to a generalization of *semantic uncertainty*, a scenario where the *sociological imagination* (or *theory of mind*, (5.4.1)) indeed *replaces* any philosophical ontology. While the conception of "open questions" may seem too grandiose if extrapolated to questions of the description of terminological concepts (which some consider equivalent to general questions of meaning), let us remember that the seemingly trivial question of what somebody intended to *mean* by using a term has indeed an "open" quality insofar as their purported concept remains *opaque* in its full cognitive extent[10] ("What speakers of a language have constructed as the meanings of the words they use, is at best compatible in the linguistic interactions with other speakers; but such compatibility remains forever relative to the limited number of actual interactions the individual has had in his or her past.", Glasersfeld, 1999a) and is therefore subject to *interpretation* which seeks to delimit the boundaries of the mutually comprehensible or compatible meaning by adding descriptions of contexts where the concepts or meanings of interpreter and interpreted *become* compatible ("To interpret an utterance or a written piece of language [...] requires something more than the construction of its conventional linguistic meaning. In fact, to interpret an utterance requires the insertion of whatever we consider its conventional meaning into a specific experiential context.", Glasersfeld, 1983). In short, the interpretation of any concept requires the interaction of *syntagmatic* information with the observer's *conceptual system*.

What experiences a concept does *syntagmatically* cover or what experiences it can *paradigmatically* cover is thus quite literally an open question. The only possible answer is a hypothetical one. The making of the fictions, conjectures or hypotheses we call interpretations requires that the so-called "conventional meaning" of a term is itself explicitated *and* combined with an explicit linguistic description of one or more contexts where it had previously been understood.

A practical example which represents such a codified interaction has already been provided by our definition for the concept of *scheme*. It encapsulates our interpretation of the term *scheme* at which we have arrived by comparing other examples inherited from the corpus of Ernst von Glasersfeld's writings. Von Glasersfeld, in turn, constructed his own interpretation of *scheme* from a corpus of Piaget's writing in a similar way:

> There are at least half a dozen concepts that have to be characterized with a certain precision if we want to arrive at a coherent interpretation of Piaget's theory. The task of characterizing someone else's concepts is necessarily a conjectural one. One

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[10]In the case of *thick concepts*, this extent may be thought of as the aggregate lexical intension, extension, guiding assumptions (*ideal types*), *prototype* experiences, and acquired cultural *stereotype expectations* associated with a term combining to form a characteristic *gestalt* only partially known to the person who built up the concept. I would term this the *declarative content* of a *thick concept*, as distinguished from the *procedural* function, which is best described by the Piagetian *concept* of *scheme*; in terms of this, the *thick concept* should be considered a *meta-scheme* that controls *schemes* for particular tasks.

cannot enter another's head to examine what conceptual structures he or she has associated with certain words. As readers of Piaget's writings, therefore, we can only conjecture what a given word meant to him when he used it. As we come across the word again and again in his works, we can try to modify or reconstruct our supposition in the hope of arriving at an interpretation that fits, if not all, at least a large number of occurrences. In principle, this is the process of hermeneutics, the art of unravelling the original meaning of texts. It should be clear that there can be no absolute answers. The reader's attempt to construct for each word a constant meaning that might fit all the encountered contexts can yield only relative results. On the one hand, the notion of fit is inevitably a relative one and, on the other, it is based on the assumption that meanings are constant for a given author. This assumption is obviously an unlikely one in the case of an author who, like Piaget, has used some of his key words for many decades during which his thinking continued to expand.

Glasersfeld, 1995, p. 54

One side-effect of this exercise might have been the construction a positive, operational description of the conceptual *black box* of *hermeneutics* (1.4.3) which we have encountered earlier in a sketchy outline, and which will be discussed again from the perspective of disciplinarian *myth* (*1.1.1.1*) in some of the following chapters. This raises a significant problem for *philosophical terminography* which however need not concern us in this place. We now conclude the aspect of *principle* and apply the consequences to two different *approaches* to *theory construction as a regenerative practice* which are interrelated in terms of the *paradigmatic* and *syntagmatic* aspect we have previously ascribed to the idea of *theory*.

4.2 Approaches

If the term *approach* indicates an orientation relative to purpose, then *philosophical terminography* and therefore the practice of *regenerative theory construction* could be considered in their *paradigmatic* expression as *worldview construction*. This is an idea which partly overlaps the construction of *schemes* for actual problem-solving in the world of experience regardless of *codification* interests. Or they could be considered strictly in relation to *codification* – which is a form of discourse production. In this case, the question remains of the relation between *worldview* and *codified product*. Our hypothetical answer would lie in pointing to the "nestedness" of *schemes*: the *worldview* could ultimately be seen as a higher-order *scheme* which calls up other *schemes* nested deeper in the hierarchy. As this is a conjectural model, the mapping of the taxonomy *theory – principle – approach – procedure* is to some extent arbitrary, especially considering that *reflective abstraction* can be thought to give rise to *meta-schemes* of an infinite order (n^{th}-*order schemes*, if a *meta-schemes* constitutes a second-order scheme or a scheme controlling another scheme[11]). For the purpose of orientation, it is however advantageous to situate the following two topics at the level of *approach*, whereby the locus of *approach* here follows the "medium" of theory construction. We distinguish whether the *theory* remains a *scheme* in the subject's head or whether it needs to be approximatively *codified* in some medium of communication, e.g. a text.

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[11]This is also applicable to the linguistic expression forms, e.g. "conversations" and "meta-conversations" (Glanville, 1996). Here, higher orders of *metadiscourses* (rather than *metalanguages*) would be conceivable.

4.2.1 Worldview construction

In case of the former, the "medium" where theory construction takes place on the *paradigmatic* perspective and interpretations, meanings and *schemes* emerge could be said to be an individual's *worldview*:

> In its broadest sense, when we talk about "a philosophy" we refer in fact to a worldview. [...] The term worldview (Weltanschauung in German) has a long and fascinating history going back to Kant (see (Naugle 2002) for an [sic!, PBN] history of the concept). The term has been and is used not only in philosophy, but also among others in theology, anthropology, or in education. [...] The term "worldview" is often used to emphasize a personal and historical point of view.
> Vidal, 2007

Worldview is defined as "a *coherent collection of concepts* that must allow us to construct a global image of the world, and in this way to *understand as many elements of our experience as possible*" (Apostel and Van der Veken, cited ibid.). This is largely analogous to Budin's understanding of *theory* (cited in Korkas and Rogers 2010, above), with the possible difference that it covers a truly global scale. A *theory*, by contrast, can have only a very limited coverage. Vidal lists the following extension that emerges from "world view questions": *ontology, epistemology, explanation, prediction, axiology, praxeology*. In this regard, a *worldview* can also be seen to cover the entire continuum of theory – practice. The author considers *worldview* in terms of a philosophical system, which may or may not be *codified*.

Our interest here is in the *embodied worldview* or the conceptual system (1.4.1) of a particular observer – inaccessible as it may be – rather than its codified model. This serves to highlight the distinction between the two senses of *theory* which emerge from the notion of *praxeology*. From the constructivist perspective, a *worldview* would be a *personal* or *embodied worldview* which provides the contextual embeddings used to make *interpretations*. It can therefore be seen as an *umbrella category* encompassing *conceptual system, belief system*, or *ideology*. This kind of *worldview* is best equated with the observer's *black box* in Figure 4.1, since no observer can be assumed to possess perfect self-knowledge; parts of their own *worldview* will be "black", at least until *set in relation* to something else. Some alternative explanations for *embodied worldview* can be associated with the following terms:

1. The term *conceptual system* can be understood as expressing the entirety of conceptual structures built up by a subject in the course of their development (Glasersfeld, 1994, my interpretation in context).

2. The term *belief system* can be seen as synonymous with *conceptual system*: "Holding beliefs is a property of p[sychological, PBN] individuals, which may rightly be referred to as "belief systems," synonymous with a "conceptual system", (Scott, 2009, p. 153).

3. The term *ideology* can be seen as synonymous with *belief system* in contexts where it describes the *belief system* of a person: "a body of assumptions which reflects the beliefs and interests of an *individual*, a group of individuals, a societal institution, etc., and which ultimately finds expression in language", (Hatim and Mason, 1997, p. 218).

Insofar as there is the intention to express elements of *worldview* in language, it can become the "controlling ideology" of a text or texts (3.3.3), but this is not likely to be a form of *direct*

control. A *worldview* is not likely to be encoded in a text in its entirety. The generation of a text from *ideational content* would not be possible (Halliday, 1978, p. 134) even if all contents of *worldview were* perfectly transparent to the reflective consciousness of the subject, whatever this may mean.

In other worlds, the *embodied worldview* can be seen as the locus of the *tacit knowing* (Mullins, 2002; Riegler, 2007) or "implicit knowledge" required to deal with "unique and novel situations" (Riegler, 2007) that results from experiential learning. Among the *tacit* components of knowledge we may also count any implicit cultural knowledge which includes the metaphoric structure of entire natural language(s) (Lakoff and Johnson, 2003) and therefore the "categories" of one or more natural languages – as proposed in the *Whorfian hypothesis* (Bertalanffy, 1968b) – and other "dark matter" that remains beneath the threshold of reflective consciousness and formulation. In this sense, *worldview* can be regarded as the *system.* As will be seen in (5.4.1) and (5.4.2), it is beneficial to observe the distinction of *system* and *model* at all times when dealing with living systems. Questions about the *model,* on the other hand, link it to the *syntagmatic* considerations to be treated in the following. First, however, a remark on the nesting of *schemes* is on order.

A *worldview* or *conceptual system* is likely to contain any manner of constructs, regardless of how one thinks these to be configured. It cannot be functionally regarded as a *scheme* since it does not coordinate particular perceptions, memories and actions in a goal-directed manner. Rather, it serves as a *heuristic fiction* to describe the sum total of imaginary or hypothetical mental entities. However, we might say that a *worldview* provides the action-guiding *subcomponents* (*principles*) of *scientificity* and *disciplinarity* which in turn provide the goal-directed *sub-subcomponents* (*approaches*) of *text-world model* and *discourse-world model* that control discourse production and interpretation – and therefore their concrete *procedures* – respectively. If we consider human interpreters to construct their knowledge *actively* and thus to act as *information producers* as the constructivist postulate holds, we can assume this sub-system of *meta-schemes* and *schemes* to mediate between *worldview* construction (the *system*) and its partial formulation in discourse production (the *model*) *either way*, describing what might be imagined as a closed circuit.

Philosophical terminography or *regenerative theory construction* can be treated as a specific form of discourse production if we disregard specifics (which are introduced later) and view it through the lens of *scheme* theory. *Worldview construction* is functionally the precondition for it, though its *primary goals* can be seen to consist in *formulation* and/ or *codification.* This aspect will be discussed next, again in terms of *scheme.* In some sense, *worldview construction* as a *paradigmatic* activity can be seen as a correlate of term *recognition* (see definition/ discussion, on page 65).

4.2.2 Discourse production

This is precisely what distinguishes *philosophical terminography* as we see it from the broad conception of philosophy (e.g. of information, of science) on the one hand and from traditional terminography on the other. *Worldview construction*, when considered as a method of philosophy (Vidal, 2007), can be seen to be primarily concerned with the modification of a *conceptual system*, although this can be seen to clash with our view on the essential continuity of *paradigmaticity* and *syntagmaticity* and as indicative of a philosophy that imagines that "epistemological constructs like 'theories' or 'paradigms' are free-standing entities apart from the main texts that present them" (Beaugrande, in 1.2.3.2). A *philosophical terminography* needs to be linguistically and

discursively aware because its aims comprise the *operationalization* of discourse fragments by interpretation *and* the *codification* of these interpretations. This can be seen in the exemplary record presented in the introduction of this chapter (4). On the level of *approach*, we will only be concerned with generic ways of tackling discourse production tasks. As noted, terminographic practices proper are an aspect of *procedure* and will be treated in the following chapter.

Considered as *approach*, the notion of discourse production stands between the *principle* of the active construction of knowledge and its correlate product, the *worldview* on the one and the *procedures* for producing a specific, preconditioned kind of discourse on the other hand. It states the orientation, which in this case is the partial linguistic *codification* of some sub-component of *worldview* in terms of a *meta-scheme* or *scheme* that involves the entities and relations which need to be signified. This also indicates the graded transition from pure *paradigmatic theory* to codified (*paradigmatic* and *syntagmatic*) *theory*, which might reflect the *worldview* aspect of *praxeology* (the "theory of actions", Vidal, 2007) insofar as it deals with the partial articulation of *schemes* which involve *tacit* or *implicit knowledge*:

> [P]eople's implicit knowledge is inordinately difficult to observe and study. In most of our examples, such *knowledge only emerged when it led to some disturbance or discrepancy*; there is obviously a vast amount that goes unnoticed even though it is indispensable for making sense.
> Beaugrande and Dressler, 1981, ch. 9, § 24, my emphasis

This also emphasizes an instrumentalist view of the *tacit* element of *action schemes* and overlaps von Glasersfeld's interpretation of the collision of *scheme* and "world" from the other end of the exchange: while the "ontic world" will not reveal its structure when it causes a *scheme* to fail, something may indeed be learned about *scheme* in question. When we talk about *partial codification*, another provision needs to be made: In what we call *philosophical terminography*, we merely use our *embodied worldview* and some of its emergent *sub-schemes* in order to divide written texts into building blocks or in order to combine those building blocks into new utterances. In other words, we presuppose that many elements which suit our formulative needs have been *codified* to begin with[12]. Our *worldview* enters this enterprise either by

- *what we select* or *excise*, i.e. the process of selection,

- the *combination* of selected building blocks and its explanation, i.e. the process of *synthesis* or *conceptual engineering*,

- the insertion of annotations which relate to the relationship between "conventional meaning" and "context", i.e. the process of interpretation.

The sum total of these efforts may be considered the *cognitive artifact* whose particulars will be discussed later; as an example, we again refer to the exemplary record (4). The more "mechanical" tasks of discourse production may be described in terms of *codification*, the umbrella category that unifies a number of practices in this regard:

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[12]Of course, the (re-)codification process will almost invariably yield "new" conceptual structures and linguistic forms as a by-product. Some considerations on this aspect can be found in Neubauer, 2012b, where they are discussed under the aspect of *relational concepts* as a family of special terminographic/ interpretative operations. Here, let it suffice that this tactic is intended to get the best effect from specialization as a social ignorance arrangement (4.2.2.2).

> The *presentation of linguistic information* about usage in *textbooks* and *reference works*. There is no unified framework for this process, but the activity [... extends to] *vocabulary* (*lexicography*) and *technical terminology* (*terminography*) [as well as ...] *idiomatic expressions and collocations* ('*phraseography*') and *style and discourse* ('*textography*').
>
> Hartmann and James, 1998, codification, my emphasis

This could be seen as the most essential motivation of *philosophical terminography*. Of course such blocks or utterances may be further combined with each other and with accompanying explanatory texts to form larger wholes of greater internal intricacy and complexity. An example for this is the present work[13]. In this case, the basic building blocks in question have to be extracted from discourse, documented, enmeshed in a textual construction which is constrained by the requirements of *coherence* – hence the proximity to the *coherentist concept* of *scientificity*, which is also key in the definition of *worldview* – and be presented and disseminated in the form of a coherent text. Insofar as the text has a *theoretical* (read: *praxeological*) content, this constitutes the practice of *regenerative theory construction* on its *semasiological* end.

In this application scenario, the more "intelligent" tasks take precedence over the more "mechanical" ones, while the entire enterprise is still essentially concerned with the combination and interpretation of discourse artifacts. For this reason, it could be described as a *discourse production* process with stages not dissimilar from that of medieval rhetoric; a breakdown of the phases of this prototype can be seen in Figure 4.2 (on page 98).

What is central here is the idea of *annotations* (Lat. *nota*, pl. *notae*), which describe the product of the processes of synthesis or interpretation and which one typically finds in *interpretative philosophical dictionaries*. The somewhat misleadingly termed *conceptual objects* (Lat. *res*, pl. *rei*) can be taken to be pieces of selected text[14] by another author (ibid.). In terms of conjectural subprocesses of a *scheme*, these fragments seemed to have been thought of in terms not unlike those suggested by the *Vichesian principle* or the idea of *maker's knowledge*:

> These phases [*cogitatio* and *collatio*] are [initiated when ...] readers/authors exchange *comments* about a *document*, and mark "notae" *indexing and arranging their ideas and concepts*. [... F]ragments arise out of the reading of the text, and interactions between author's ideas and her/his readings (Cogitatio) and authors and her/his fellows (Collatio). Readers/authors [...] contextualize it by creating a *context* to the document through notae in adding fragments. *Adding a nota means modifying the context, and so the document. Nota* could be seen as a kind of *indexing object*, a "*metadata*" or as a *contextualizing object*, a "*co-text*" and a *context*.
>
> Lortal, Lewkowicz, and Todiarascu-Courtier 2005, my emphasis

Annotation is therefore the *syntagmatic* correlate of interpretation. It produces an annotated text fragment explicitating a concept or inserting a "conventional meaning" into its "context" in the symbol space of a written text, whereby a "worldview component" is explicitated in terms of

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[13]Here, it should be mentioned that this in no way antithetical to *codification* for producing works of reference. Eugen Wüster (1985, 107, my translation) mentioned a specific type of dictionary – the *text dictionary* (Ger. *Textwörterbuch*) – which consists of definitions inserted into the running text. Admittedly, this type of work was rare even in Wüster's day; Schlomann's (2.1) technical dictionaries are mentioned as *prototype* in this context (ibid). It is conceivable that this form of presentation would make an excellent philosophical dictionary if combined with an *onomasiological* macrostructure and a mesostructure of associative cross-references so that it could do double duty as a manual or textbook, depending on its level of abstraction. Some terminological textbooks (Wüster, 1985; Felber, 2001) themselves follow this pattern.

[14]Of course the objects are conceptual because they must be constructed in interaction, or rather the information with which they come to be associated must be produced by the observer.
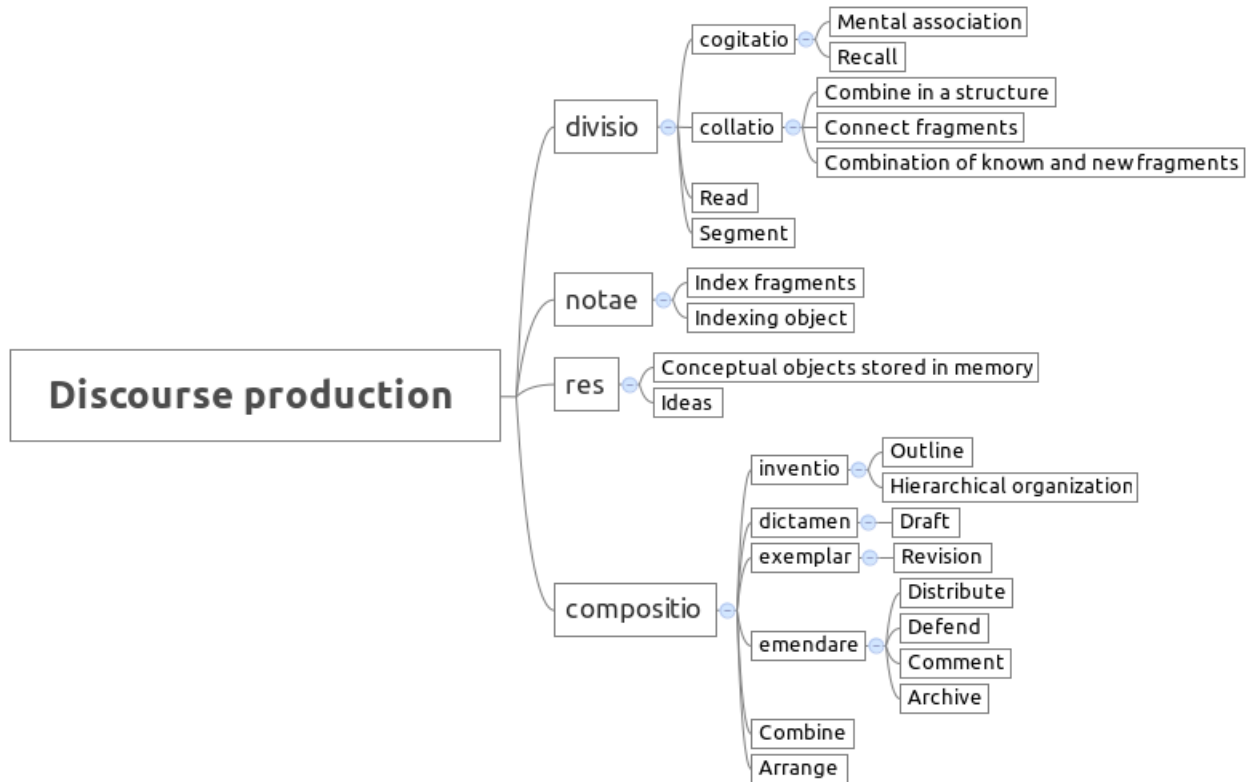
Figure 4.2: Components of medieval discourse production, after Lortal, Lewkowicz, and Todiarascu-Courtier, 2005.

interpretation. The selection of *conceptual objects* can be seen to correspond to both *conceptual engineering* on *paradigmatic* view and to *codification* on the *syntagmatic* perspective. Taking a constructivist and/ or cybernetic view on the process of discourse production, we should be able to identify some *scheme* which controls discourse production by "inductive learning from experiential outcomes" (Example 4.7) and steering to "reference values" as suggested by the *thick concepts* of *scientificity* and *disciplinarity.* Hence, discourse production can practically be linked to term *re-presentation* (see definition/ discussion, on page 65). Models that fulfill the function of a *scheme* are the *text-world model* on the one, and the *discourse-world model* on the other hand. Both are originally *imported* from text linguistics. Here, they are assumed to function both analytically and synthetically, i.e. in text "reception" and production.

4.2.2.1 Text-world model

A *text-world model* can be defined as "the total configuration of knowledge activated for processing the text" (Beaugrande, 1984, ch. 3, § 2.14). More explicitly, this has been described as the *paradigmatic* network of concepts and their relations (or "propositions", which outside the logical or theory of truth context (definition on page 72) can be weakened to any "*relation obtaining between two concepts*") composing the "knowledge space" to be explicitated in a text (Beaugrande, 1980, ch. 1, § 6.10).

Its relation to *worldview* is isomorphic to that which obtains between the constructivist and

the traditional terminological understanding of *concept(ual) system*[15]. In the process of interpretation or meaning-construction from a text, the *text-world model* supports "problem solving" by "inferences" of the form of "if-added" or "if-needed" *heuristics* to resolve what are, in constructivist terms, *perturbations*[16] or in Beaugrande's terms the specific problems of semantic "discontinuity", "discrepancy", or "gap" (ibid, § 6.9).

In text production, we can assume that these problems have already been solved by the text producer; yet, questions of *augmentative* structure[17] and content inclusion or exclusion – i.e. which *annotations* or codified discourse data to insert or set in relation with which context – call on a *text-world model* that includes constellations of goal-concepts and *propositions* such as we have ascribed to the *thick concept* of *scientificity*. Since a text is however ideally a communicative act, it also must be under the control of a model of other discourse participants. Such a model would likely contain a social or *procedural* element and amount to what can be considered a *discourse-world model*. Here would be the place for *stereotypes*, *conventions* and any kind of "background expectations" (Stubbs, (3.3.3)) which are inherent in the model of the *thick concept* of *disciplinarity* that we assume to be in control of the *discourse-world model scheme*.

4.2.2.2 Discourse-world model

In contrast to the case of the *text-world model*, there is no sharp definition of what should be understood by a *discourse-world model*. Generalizing a guiding model *beyond* the boundaries of a text raises issues that strictly belong to a *theory of mind* (5.4.1.1); it requires an exercise of the *sociological imagination* to interpret instances of text elements in terms of a hypothetical *worldview* which is heuristically ascribed to other discourse participants:

> The notion of "text-world model" [...] might well be expanded to that of a discourse-world model (cf. "discourse model" in Bullwinkle 1977; Reichman 1978; Rubin 1978b; Webber 1978). *This entity would be the integrated configuration of concepts and relations underlying all the texts in a discourse.* However, allowances would have to be made for possible *disagreements among the discourse-world models of different participants.* The monitoring of situations and texts [...] would help to minimize conflicts among these models, *notably by addressing assumptions and standards not mentioned explicitly in the text.*
> Beaugrande and Dressler, 1981, ch. 9, § 23, my emphasis

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[15]By contrast, a *concept system* is "the set of concepts of a particular subject field forms a system in which each concept occupies a definite position", (ISO TC37, 1987) and can only be described as a model or *ideal type* of a schematic presentation of the bare conventional linguistic meanings together with a fixed context by *no one in particular*. The relation that can be imputed to obtain between *worldview/ conceptual system* and *concept system* is the system/ model distinction of second-order cybernetics or that which obtains between *scheme* and schema.

[16]A *perturbation* is defined as "anything that upsets an equilibrium [in the subject's conceptual system, PBN]", Glasersfeld, 2002. A further specification is that **"On the cognitive level [...] perturbations that impede equilibrium spring from the *mutual incompatibility* of goals the organism has chosen and/or of the means used to attain them"** (ibid.), which in the case of text interpretation may be readings that conflict earlier interpretation of, e.g. the meaning of a term or phrase in the text.

[17]We consider an *argument* to be any unit composed of purposefully structured symbols, after Engelbart (1962), rather than in the narrow sense of "serial sequence of steps of reason, beginning with known facts, assumptions, etc., and progressing toward a conclusion.". *Arguments* can be non-linear though they must be sequential: "an argument is not a serial affair. It is sequential [...] because some statements have to follow others, but this doesn't imply that its nature is necessarily serial. We usually string Statement B after Statement A, with Statements C, D, E, F, and so on following in that order". Arguably, this view fits the experienced textual expressions of conceptual structures and allows grouping text fragments, *explications* (5.3), *defining contexts* (2.3.4.1), *knowledge-rich contexts* (5.1) or *encyclopedic information* under the same umbrella.

In the context of special language studies or terminology research, the aspect of *specialization* (2.3.2, § 1) would loom large in the construction of a *discourse-world model* for both de- and encoding the "*configuration of concepts and relations underlying all the texts in a discourse*". At a bare minimum, a suitable *scheme* must allow one to determine the quality (i.e. the *concept system*) and quantity (e.g. the aspect of *register,* (7.2)) of the *explicitly* lexicalized expressions of knowledge that must be assumed as *characteristic* for the texts of a given subject.

This idea is echoed by the *horizontal* and *vertical* levels or dimensions of *specialized subjects* and *specialized languages*, respectively (Hahn, 1984; Kalverkämper, 1998a; Hoffmann, 1998), whereby the division between these is not exactly clear (see (6.2)).

Here, the *horizontal dimension* would approximately correspond to the ontological relations between subject fields in conjunction with (special) linguistic considerations regarding the fields' languages (i.e. the "distance or proximity of subject fields with regard to linguistic affinity, which is assessed comparatively or judged intuitively on a case-by-case basis", Kalverkämper, 1998a, 10, my translation) as they would be addressed in information science under the category of *categorization*[18].

The *vertical dimension* relates to the levels of specialization and special language *registers* (e.g. written/ spoken, specialist to layperson, specialist to specialist, etc.) within either special language variant or "dialect", i.e. "the specifics of a special language that emerge in comparison to its sub-variants or different special languages" (Hoffmann, 1998, 682/683, my translation).

Perhaps for this reason, they form a separate problem sphere to be *addressed* by the very conceptions of *scientificity* and *disciplinarity* as the varying conceptions and models of the vertical/ horizontal matrix are controversial and can generally be regarded as so unwieldy that they might as well be replaced by individual and empirical experimentation to begin with (compare also Temmerman, 2000, p. 47). Hahn (1984, 72ff., my translation and emphasis) notes:

> A horizontal division would, in principle, be the logical choice for the structuring of specialized subjects [...] However, the systematic designation of specialized subjects is not a trivial matter on the one hand, while on the other, the specialized languages of individual [separate, PBN] subjects may undoubtedly demonstrate close kinship (Physics, Mathematics). Conversely, the breadth of variation within the same subject can be significant, as any comparison of a given two empirical studies of specialized discourse will show. Two variants of a special language can be as dissimilar as the specialized languages belonging to different, neighboring subjects. Consequently, [the distinction of horizontal levels, PBN] was soon followed by a vertical subdivision of different levels within the same special language, which was intended to lead to a two-dimensional matrix for describing specific objects of special language.

As the general trend in special language studies seems to have moved away from understanding specialisms ontologically in favor of a more sociological form of study (H.E. Wiegand, keynote address at GAL 2012), it is perhaps advantageous to regard specialization in general as a "negotiated ignorance arrangement" that helps diversify learning and is therefore a feature of social

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[18]Here, *categorization* is understood as "The practice of organizing library collections in broad categories, as opposed to detailed classification. The term particularly refers to this practice for fiction, but can apply to other materials, for instance in school libraries." (Feather and Sturges, 2003b, p. 60). This corresponds approximately to the understanding in sociocognitive terminology (Temmerman, 2000, pp. 63/64), only that it relates to the texts themselves rather than the experiential phenomena they evoke. In any case, categorization is different from logical *classification*, especially *monodimensional classification*, in which a "series is constructed solely on the basis of one ordering characteristic [...] until the desired depth of classification is reached or the possibilities of division have been exhausted." (Picht and Draskau, 1985, p. 68)

cooperation (Smithson, 2008, p. 221). The individual side-effect of such arrangements would however crystallize in the form of increased *indeterminacy* (ibid, 210), which can be seen as "ignorance" by "selective choice":

> Part of the idea [of ignorance as "selective choice", PBN] is that *inquiry is always selective.* We look here rather than there [...] and *the decision to focus on this is therefore invariably a choice to ignore that.* Ignorance is a product of *inattention,* and since we cannot study all things, some by necessity - almost all, in fact - must be left out. "*A way of seeing is also away of not seeing - a focus upon object A involves a neglect of object B.*" And the world is very big - much bigger than the world of Descartes and Bacon [.]
> Proctor, 2008, 7, my emphasis

On the other hand, "different assumptions and standards", i.e. *conventions* stand for the *tacit knowledge* that must be assumed to be different across the specialized cultures, sub-cultures, and sub-cultures that can be perceived *inside* the *horizontal* and *vertical* matrix. These *conventions* can be seen as the motivator of choices to know or to ignore, or the choice to trust somebody else to know.

A valid example for this is Kalverkämper's idea of the "systematics of subject fields". He relegates the responsibility for these to "documentation specialists, social scientists, cultural historians", stating that the construction of *horizontal classifications* was not "the primary task of linguists" (Kalverkämper, 1998a, 10, my translation).

Increased *indeterminacy* might result if one assumes that "there are as many specialized languages as there are specialized subjects" (Fluck, cited ibid.) and that the variance of levels of specialized discourse therefore follows from the diverse classification of subjects.

Most interesting with regard to the *vertical spectrum* is that besides differing degrees of abstraction (Schmidt, 2001) in specialized texts; specialized texts can also exhibit unexpected features like *taboo* (7.2). One can assume that especially on the *horizontal* level, the influence of *contingencies* (6.1.2.1) will be more common than phenomena to which motivation can be ascribed in a straight-forward manner. For our considerations, however, this does not have any relevance now. We will re-approach the problem from this perspective in Chapters (6) and (7).

The idea we are trying to develop in this regard is that we give up the notion of making statements about the *horizontal, vertical* or other ontological structure of what is best seen the continuous *discursive multiverse*[19] and only speculate about the conceptual structures insofar as:

1. interpretations of pieces of discourse are *assimilated*[20] to some person's thick concepts of *scientificity* and *disciplinarity,*

2. these structures are *accommodated*[21] to conflicting information, or

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[19]A term which accounts for the idea that every discourse participant has constructed their own *discourse-world model* which is *contingent* on their experience: "*multiverse* [i.e. the idea that there are] *many different domains of operational coherences as many different and equally valid domains of reality* [...] *are brought forth by different kinds of operations of distinctions*", Mendez, Coddou, and Maturana, 1988, 150, my emphasis.

[20]The cognitive process which leads to the abstraction of regularities (Glasersfeld, 1990a) or to the formation of patterns on the basis of varying experience by selectively disregarding differences (Glasersfeld, 1981).

[21]Change in a conceptual *scheme* in order to account for new experiences; *accommodation* is a form of learning, especially in case of failure, that leads to the modification of an existing *scheme* or the formation of a new *scheme* (Glasersfeld, 1981). However, *accommodation* does not give any indication of the cause of failure, which is assumed to be in the unknowable ontic world (Glasersfeld, 1990a) . We can therefore assume that (*as-if*) conjectures on the nature of *scheme-failure* are constructed and modified together with the *schemes* themselves, which corresponds to the *function* (*prediction, explanation*) of "ontology" as a *worldview* component.

3. the information is disregarded or not built up/ interpreted at all (more conventionally: not "received"), as suggested by the construction of ignorance or *indeterminacy* above, either by accident or design (3.3.3); this can also be seen as a form of *assimilation.*

Staying within the semantic range of scheme theory, these processes can be said to resolve *perturbations* (analogous to the function of the *text-world model*, but in terms of shared background knowledge across texts rather than of inferences within a textual structure) and therefore to restore *equilibrium*[22].

While these structures are best seen as subcomponents of *worldview* or as general, multipurpose concepts which are action-guiding (*thick concepts*; we prefer this designation to the constructivist term *scheme* in this case because we wish to stress their *declarative* and *procedural* function), they can be conjectured to control the special-purpose constructs on a lower level for which we have adopted the terms *text-world model* and *discourse-world model*, respectively. These latter constructs can be considered *schemes* proper.

Central to both levels of hierarchy is in any case that we assume, together with the constructivist thinkers, that cognizers (as *worldview* holders and discourse producers) control their perceptual input rather than their output (Glasersfeld, 1981; Riegler, 2007) by and in coordination with these conceptual structures and that they only come in contact with (and therefore generate a response by) the *discursive multiverse* when their constructs come in conflict with *intersubjective ontological assumptions* (e.g. (2.4)).

Likewise, it seems conceivable that if we understand terminological understanding as a middleout process, *meta-scheme* components of *thick concepts* can compete in discourse production or interpretation. These are however consideration that are more appropriately discussed in the outline of *disciplinarity* ((6), (7)) which seems also central to term interpretation beyond isolated texts.

4.3 Philosophy and philosophical terminography

In the present context, it should be more interesting to develop the aspects of *principle* and *approach* synoptically into a functional model of *philosophical terminography* as regenerative practice in second-order terminology, or *terminology as an applied philosophy of information.* For this purpose, we have integrated the relevant aspect into the diagram shown in Figure 4.3 (on page 107) which is now to be interpreted.

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[22]a term which signifies the state of relative stability in an organisms "inner milieu" (Glasersfeld, 1981) brought about by a process of "adaptation [by *assimilation*, *accommodation*, PBN] improving the organism's [...] fit, relative to experienced constraints." (Glasersfeld, 1995, p. 63). *Equilibration* is therefore the *nomen actionis* or "generic term for the elimination of *perturbations*." (ibid, 67). The idea of *equilibrium* in constructivism is a problematic one, and has implications for the interpretation of *scheme* at large; for one, there is the distinction between cognitive and biological equilibria ("cognitive regulation and cognitive equilibrium [are] different from vital, i.e., organic, equilibration", Glasersfeld, 1982), which highlights that the reflex analogy of scheme must be regarded as partial or flawed; so is the feedback loop analogy ("Piaget [...] made very clear [...] that what had to be kept constant in the cognitive context, did not have to be a fixed value [as opposed to homeostasis, PBN]", Glasersfeld, 1995, p. 67). Obviously, these overlapping metaphors have made interpretations difficult and duly attracted criticism (Bertalanffy, 1968a, pp. 190/191, and Beaugrande, 1994, § 54, both to the effect that an organism in the state of perfect stability is in effect a dead organism). (Glasersfeld, 1982) emphasized the idea of *equilibrium* of dynamic and relative: "'Equilibration', in the context of Piaget's work, is [...] not a static affair which returns to a status quo, but rather a relational *concept* whose range is continuously extended by the formation of new structures in the overcoming of perturbations", which is consistent with the idea of schemes as self-regulating structures.

Due to the *middle-out approach* to *analysis by synthesis*, most of the conceptual entities float between the two poles and are arranged according to both their degree of abstraction and their role as *schemes*. Functionally, we might map the red areas to the level of *paradigmatic theories*, whereby pragmatic sub-function have received a lighter coloring. The deep yellow level of the *meta-schemes* of *thick concepts* would then correspond to *principles*, the light yellow level of *schemes* to *approach*, and the final (yellow) layer to *procedures*, about which nothing specific has been said so far.

1. Given the difference between *philosophy* and *philosophical terminography*, we assume that the first, being more *paradigmatic* and interested in the construction of *worldview*, starts from the top.

   a) The entities that constitute *worldview* are topical *paradigmatic theories* (*epistemology, axiology, praxeology*) as listed in Vidal's taxonomy, with the exception of *ontology*, which has been adjusted according to the constructivist principles discussed here and in the preceding chapters. One could say that it has been "dissolved into cognitive science and the philosophy of language", which can be explained as follows:

      i. assuming that an *ontology* (not unlike the artificial knowledge organization system that goes by the same term) can be explained as an individual's conceptual structure that has the purpose or *function* of *explanation* and *prediction* (both of which are in Vidal's interpretation *worldview* components in their own right), the function of *prediction* is a purpose of *reflective abstraction* from existing *schemes* in order to *predict* what a different *scheme* might do, so that it might work better in terms of (e.g.) recalled experiential situations where other *schemes* have failed. This might also serve as *explanation* for *scheme* failure (or as a *heuristic fiction* about ontic reality; in this area, there can be no clear-cut logic of "either/ or"). If the *scheme* relates to the behavior of other agents (*black boxes*), then the *predictive function* of *ontology* is similar to that of a *theory of mind*, which is an aspect of cognitive science. In general terms, *theory of mind* is what *enables* the *sociological imagination* necessary for the construction of an *ontology* of social reality on the basis of an individual's experiential reality.

      ii. The second function – which to some extent overlaps the first – can be assumed to lie in the *explanation* of experience, *schemes* and other conceptual entities. As a large number of different explanations can be modeled on different patterns, preferences for one kind of pattern or the other may play a role in *explanation*; for example, people may prefer an *explanation* that is consistent with tradition, empirical natural science, or with other strands and elements of the same explanatory narrative. In this area, *explanation* overlaps *epistemology* insofar as considerations for what knowledge consists of enter into the complex. Generally, we could explain the patterns of *explanation* in terms of language games; here, different "teams" of "players" "play" by different "rules". Indeed, *ontology* seems to collapse into the philosophy of language on this perspective.

   b) *Axiology* is the theory of values, especially moral ones, and may – or should be hoped to – control *praxeology*, the theory of actions (Vidal, both). While a deeper discussion of this topic unfortunately cannot be accommodated in the thesis, a brief discussion of

axiological (i.e. ethical) concerns will be presented in the form of a thought experiment related to the idea of disciplinary *agenda* in (7.1).

c) Likewise, a *praxeology* can be informed or constrained by the predictive function of *ontology*, i.e. what practical goals are or are not deemed achievable or worthwhile (compare (7.1.1.1) and e.g. Riegler, 2007, Glasersfeld, 1995, p. 76 on the influence of behaviorism: "The founders of behaviourism were adamant in their contention that there is nothing beyond the observable that could be of interest to science. Focusing exclusively on behaviour and defining behaviour as observable responses, makes it easy to avoid dealing with any intelligent organism's more complex capabilities."). The theoretical practice and/ or practical theory of *codification* to be addressed in the present chapter can be regarded as primarily derived from *praxeological* concerns. This is essentially what is depicted in the upper, red-shaded half of the diagram.

d) As should have emerged from the foregoing, we cannot speak of *schemes* in this area as no immediate actions can be suggested by what is best described as a family of *umbrella categories* associated with a *gestalt* concept. *Schemes* – if we think of them as *concrete tripartite programs that suggest specific actions for specific perceptions to achieve specific goals* – must reside in some other structure on a deeper level of the hierarchy that is controlled by these vague groupings of conceptual entities. If we regard the observer as an *information producer* (and therefore both a *maker of conceptual knowledge* and of *communications about this knowledge*) and accept that *schemes* can control a "sophisticated arrangement of cognitive structures" (Example 4.2) that enables "inductive learning from experiential outcomes" (Example 4.7) and "reflective abstractions" (Example 4.6), *(meta-)schemes* are, in terms of the *worldview* schema, strictly an aspect of *epistemology*. If we further bear with the assumption that *epistemic operations* can be explained in cybernetic terms (Glasersfeld, 2002), we can enlarge the analogy by further imports from this field. This will have the added advantage of explaining the hierarchy in a schema of hypothetical entities in the first place. Specifically, we refer to two cybernetic "laws":

    i. The *law of requisite variety*, which holds that "control or regulation is most fundamentally formulated as a reduction of variety: perturbations with high variety affect the system's internal state, which should be kept as close as possible to the goal state, and therefore exhibit a low variety [. . . T]he law of requisite variety [. . . suggests] that the regulator must have a sufficiently large variety of actions in order to ensure a sufficiently small variety of outcomes [. . .] This principle has important implications for practical situations: since the variety of perturbations a system can potentially be confronted with is unlimited, we should always try maximize its internal variety (or diversity), so as to be optimally prepared for any foreseeable or unforeseeable contigency [sic!]", (Heylighen and Joslyn, 2001, p. 15). In this case, the point is that identifying a discourse as belonging to a specific domain of human activity (e.g. science) and to a specific community of discourse producers therein (e.g. *disciplinarity*) requires the *assimilation* and *accommodation* of more experiential variety than comprehending or designing the structure of a particular text or microtext or tracing its particular (in any case, finite) connections to other specific instances does. This metaphoric application of

> the law therefore suggests *diversifying* the model, according to the *law of requisite hierarchy*.

> ii. The *law of requisite hierarchy* in turn suggests that "a control loop will reduce the variety of perturbations, but it will in general not be able to eliminate all variation. Adding a control loop on top of the original loop may eliminate the residual variety, but if that is not sufficient, another hierarchical level may be needed. [. . . w]hen the variety becomes really too great for one regulator, a higher control level must appear to allow further progress", (Heylighen and Joslyn, 2001, p. 18). This is relatively intuitive since it fits most ideas of *generic to specific* hierarchies with different levels and nodes. Our *worldview* model can already be seen as the highest hypothetical level of control of experience (or the experiential inputs), so more specific functions need to be seen situated further down.

e) Thus, we assume the *umbrella categories* of *worldview* to be populated by *meta-schemes* (among other other entities). One of them is *scientificity*, which can be seen as a *meta-scheme* for *selecting explanatory patterns and operating in terms of them*.

f) For *syntagmatic theory*, this can be seen as a central function which translates downward into the *scheme* of *text-world model*. This is used either for *recognizing* explanatory patterns when interpreting textual objects (*rei* and *notae*) or for producing them. A repetition of one possible *text-world model* for outlining scientificity need not be restated here, as it can be found in the preceding chapter in some detail. *Scientificity* can, as noted, be seen as a simplification of the *worldview component* of *epistemology* and be hypothesized to work in terms of *prototypes* (best examples) and (logical) *ideal types*. The simplification can be seen to be achieved in terms of models and is relatively unproblematic *if* one discounts the probable interference with other models.

g) Analogous to this, we can assert the *worldview components* of *prediction* and *explanation* which controls the *meta-scheme* of *disciplinarity* (which in turn *functions* in terms of *ontology*). This is far from unproblematic as it can be seen to interfere with the *text-world model* when controlling the *scheme* of *discourse-world model*. For this reason, two further chapters ((6), (7)) will be dedicated to its full articulation in terms of the *declarative* and *procedural* dimensions a model of *disciplinarity* needs to have at a minimum. This might be justifiable insofar as group standards (*social stereotypes*, (2.5.2)) and similar cognitive simplifications or *heuristics* (2.5.3) are assumed to assist in determining the general direction of reasoning in the absence of detail.

2. Here, we have crossed the border into the second, yellow-shaded lower half of the diagram where we are more interested in *codification* concerns. From the "bottom-up" perspective, we would start from here in the construction of discursive and cognitive artifacts. This is however the realm of *procedures* that we will enter in the following chapter.

Organizing the layers of the model hierarchically and specifying control functions between them also gives an added advantage to the model. It can now not only be mapped to the analogous hierarchy or taxonomy of *theories, principles, approaches* and *procedures,* but we can also specify the most likely place and function of the major concept theories proposed for and used in terminology research:

We could say that in the transition of control from *worldview element* to *meta-scheme* to *scheme* can be hypothesized to work in terms of *prototypes*, or concrete exemplars that a cognizer might want to represent in order to *compare* their ideational content to *ideal types* of text as they are exemplified, e.g., by particular influential textbooks (e.g. the *Tractatus Logico-philosophicus*) or the style of a particular author to be emulated (e.g. Ludwig Wittgenstein). Support for this way of thinking can be found, e.g., in George Berkeley's contention that people may not have *general* ideas because they are only capable of representing *particulars* (Berkeley, cited in Glasersfeld, 1995, p. 91).

That both *stereotype* and *prototype* theory should be taken to co-exist with the classical theory of logical concept formation in a non-contradictory manner becomes evident when we visualize what happens in the third transition of control, i.e. that from *meta-scheme* to *scheme*. Following the path from the highest level of abstraction or *worldview* to *ideation* to actual *symbol structuring* (Engelbart, cited in the Main Introduction, p. ix ff.), logical and rational models are activated in order to break the tasks of discourse production (i.e. the future *onomasiological macrostructure* of the discursive artifact) into portions that are both manageable in terms of the schema of discourse production and – in terms of their argument structure – acceptable to a *simulated* recipient mind endowed with certain cultural preferences for linear presentation, rhetorical progression and the like.

We will now discuss the area of *procedures* under the aspects we have identified in the more abstract levels of hierarchy and make similar modifications in more concrete terms.

Figure 4.3: The relationship between philosophical *worldview construction* and *philosophical terminography*.

5 Adapting procedures for philosophical terminography

Introduction

Philosophical terminography is, in terms of theory, a hybrid between terminography and text production, and it is concerned with the partial *codification* of a *worldview* within the constraints of *text-world model* and *discourse-world model*. This should follow from the discussion of *principles* and *approaches*; the former specify the boundaries of the latter. *Approaches* do provide orientation in general terms. The evaluation of case-specific factors has lead us to a model of how the hypothetical cognitive entities, relations and processes that follow from our *principles* and *approaches* form a coherent network, which has also been explicitated. In the case of *procedures*, the situation presents itself differently. Coherence is not sufficient as a criterion in itself and the framework needs to be adjusted for pragmatic concerns.

For this reason, *procedures* can be seen to connect – ideally – *to* the model, but cannot be derived directly *from* it. While the overarching framework only has the purpose of orienting the practitioner to the structure of some special-purpose ratiocinations and is therefore relative, the *procedures* that have been devised for similar cases (which need be identified by analogical reasoning, as (5.2) demonstrates) should be reconstructed as far as possible from intersubjective accounts of experience. This would seem advisable since there is a very large number of viable alternatives for completing each *particular subtask* that can derived from any given *principle* or *approach.*

It is advantageous to forgo re-enacting unsuccessful or inviable *procedures* and invest the effort instead into a synthesis of *procedures* which have proven *viable* in analogous experiential situations.

This is likely to involve, among other things, the adaption of familiar procedures to unfamiliar *principles* and *approaches*. Here, we start from the lowest common denominator (i.e. an *assimilation*). The capability for *accommodation* should follow from processes of experiential learning (i.e. finding that some *principles* or *approaches* do not work; see (7)). Both can be understood as a matter of *scheme* hierarchies or systems. The identification of *procedures* to be blended and adapted starts with a first act of *assimilation*, derived from the *approach* of discourse production:

- Let us assume that terminography, insofar as it comprises the writing or editing of glossary or dictionary entries, already overlaps discourse production to some extent; some speak of dictionary definitions as "lexicographic *microtexts*" (Budin, 1994), which indicates that they can be seen as a genre of text. This is also cogent with the idea of regarding reference works as discourse (Beaugrande, 1997c; (1.2.3.2)). Through this perspective, we bring "traditional" terminography into the fold.

- Let us further *assimilate* the field of philosophical lexicography on the assumption that the

description of lexical units and the practice of codification proceeds along similar lines in lexicography and terminography.

- Another *assimilation* will include sociological terminography in the list of likely *viable procedures*, as the discourses of the social sciences and philosophy can be seen as sufficiently similar.

- Finally, let us evaluate the ideas of *knowledge engineering* and *language engineering* on the count that they are devised from *principles* and *approaches* similar to the ones we have elaborated here. In this case, the outlook entails not so much devising a *viable* way of structuring the *syntagmatic* "flow of experience" but to establish a logical interface to the *paradigmatic* end of the theory construction enterprise. Without this, there can be no continuity of theory with practice or "regenerative" effect. Much less will there be a smooth technological extension of the *practice of theory construction.*

First, we start with the adaption of "traditional" or generic terminography, which will be short as our observations in this area have been set down elsewhere (Neubauer, 2008).

5.1 Generic terminography

The *assimilation* here lies in reconciling the idea of discourse production with the observation that this aspect of the practice is traditionally under-emphasized, as terminography generally proceeds from a given *record format* (historically card fiches, nowadays computational templates or database entry masks; Neubauer, 2008). The record format can be seen as dictating the macrostructure[1] of the "text", while individual components are to be kept at sentence-length by often implicit *convention*.

This certainly seems to be the case for definitions:

- "the definition is concise, clear, and no longer than one sentence", (Pavel and Nolet, 2001, p. 26) .

- "A good terminological definition is a brief, to-the-point statement that should not be longer than one sentence", (Muegge, 2007).

This *convention* can also be assumed to hold for other values of the record data-set, e.g. usage or context examples, which may also contain defining criteria in context (or *defining contexts/ knowledge-rich contexts;* Dubuc and Lauriston, 1997; Meyer, 2001).

It will remain an open question whether this convention emerged due to the material constraints (e.g. space on fiches or the limited storage capacities of early computers), has been inherited from the tradition of *logical empiricism* (Budin, 2006), which pursued to analyze e.g. observation statements in the form of *protocol sentences*[2], or is due to the centrality of the unit of sentence in 20th century linguistics and philosophy in general (Beaugrande, 1999, §§ 2.1-2.15).

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[1]We can think of this as *meta-codification* in the sense of a higher order variant of *codification* (4.2.2): while *contingent* historical artifacts are excerpted, combined and reordered in accordance with some culture-specific *meta-scheme* (8.2) in *codification*, *meta-codification* could be seen as concerned with providing the best suited means and infrastructure for *codification* as well as the *meta-schemes* themselves.

[2]"a protocol sentence [...] is supposed to be a statement of experience immediately recorded", Giddens, 1979, p. 252

What remains is that as a consequence of the primacy of the sentence in the record format, typical parameters of *textuality* or *texture*[3] such as *cohesion* (3.3.3) and *coherence* (3.3.3) are not generally perceived to play a role in the practice of terminology description or terminography, since definitions need only to be written so that they satisfy the standards of the project's or general guideline as self-contained sentences[4]. Example sentences, on the other hand, can be harvested – often automatically – from the corpus of texts used for terminology compilation without consideration for their function in the surrounding *texture*.

Due to this inherited convention (and likely due to nature of many application scenarios), the potential of generic terminography as a source for *procedures* of *philosophical terminography* appears limited, but it can viewed in a different light if one considers, e.g. metadata standards (Neubauer, 2008) and terminological products as means of *meta-codification,* that is, as means used for the enactment of *meta-schemes.*

So considered, generic terminography might help produce *templates* for *philosophical terminography*, sociocognitive terminology or other non-conventional and special-purpose *principles* and *approaches.* The power of templates for constructing unified coherent wholes of any kind, including *syntagmatic* theories, can hardly be overestimated, but this is strictly speaking a topic that pertains to the implementation of a practical terminographic system (see Main Conclusion).

Here, it is sufficient to state that the influence of logical empiricism as **the** *ideal type* of *scientificity* has waned in the meantime (Hebenstreit, 2007) and that it is safe to say that the contemporary relational databases underlying common terminology management systems allow any free-text data element to hold a virtually unlimited stretch of textual data besides other forms of content. Taken together with the repeatability of data categories, this means that alternative (e.g. *semasiological*) *principles* can in principle be supported by these instruments (5.4.2).

There is no practical hindrance to the *meta-codification* of e.g. philosophical dictionaries and glossaries *except* the problem of *accommodating procedures* and *instruments* to the apparent traditions of the respective codification practices.

5.2 Philosophical lexicography

This can be seen in the stark contrast between generic terminography and the practice of *philosophical lexicography*, insofar as one considers it a unified field of endeavor. While principles of *meta-codification* seem to be nonexistent, the latter seems to emphasize the authorial aspect of compilation and annotation and is therefore amenable to both the *principle* of active knowledge construction and the *approach* of discourse production.

As Roelke (1999) relates with reference to the German-language "tradition"[5] of philosophical lexicography (which the author divides into three "phases", including the 18th,19th, and 20th

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[3]i.e. "aspects of text organization which ensure that texts hang together and reflect the coherence of a structure in a context. Texture includes aspects of message construction such as cohesion, theme-rheme organization, as well as idiom and diction", Hatim and Mason, 1997)

[4]The provision that the definition should contain such characteristics or classes as are present in the *system of concepts* (ISO TC37, 1987, e.g.) does not cancel this assessment insofar as the definitions representing the system of concepts do not need to constitute a unified textual surface.

[5]We could not find any specific material on the topic for the English-speaking world; however, evaluation of the form and content of English-language dictionaries on general philosophy, specific tendencies or specific philosophers (Lacey, 1996; Caygill, 1995; Wortham, 2010; Whitaker, 1998; Heylighen and Vranckx, 2002) suggests that Roelke's findings remain valid for this language, too.

century), no particular standards have evolved for either micro- or macrostructures that could form a basis for the abstraction of comparable templates. The general trend seems to go towards textual forms of expression whose component parts include: interpretations, context examples, encyclopedic information, sometimes (!) bibliographic information, and often text fragments (*Ger. "Belegtexte"*). All of these can be grouped together under the *umbrella category* of *annotation*, except the text fragments themselves, which can be considered pre-codified discourse data. In the absence of formulaic record structures, repetitive or repeatable, variable-like categories like grammatical or pragmatic information also tend to be absent (ibid, 2000). Roelke concludes:

> There is no characteristic form of meaning description that can be seen as typical for philosophical dictionaries. If anything, the main characteristic is the high degree of variability which can be found even inside the self-same dictionary [...] *The selection of examples and citations is generally left to the author's discretion alone and has the purpose of backing up the descriptions of the particular senses.*
> Roelke, 1999, p. 2000

With regard to the purpose and motivation of philosophical lexicography, Roelke distinguishes between two types of work: the *interpretative* and the *documentary dictionary* (ibid, p. 2001/2002). While *interpretative dictionaries* serve in the interpretation or "*exegesis*" (ibid., p. 2002) of philosophical texts or aid the study of philosophy, *documentary dictionaries* rarely contribute to interpretation because they present the "raw" data of concordances and indices of philosophical works without interpretative components (ibid., p. 1999; 2002).

With regard to the hybrid conception of *philosophical terminography*, it is clear that it would require some middle ground between these ways of documenting philosophical terms and concepts. It would likely tend to the interpretative end, with the additional requirement of an active or generative *intent*[6].

5.3 Sociological terminography

This could also be said for *sociological terminography*, a field label which we use in a deliberately polysemic way to group two phenomena in terminography under one *umbrella category*; this might be justified by our specific interest in *procedures* alone, while differences between any one approach to either variant within the umbrella category are generally matters of *principle*:

- For one, we use *sociological terminography* to denote any practice of descriptive terminography that is concerned with the social motivation of terminological phenomena or the impact of social change on the pragmatic use of terminology; this would comprise *socioterminology*[7], sociocognitive terminology and a number of research interests or isolated projects

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[6]The absence of such considerations is perhaps due to the self-understanding of past philosophical lexicographers as philologists, which also colors Roelke's study (ibid, 2002); the general interest here is oriented towards the *conservation* of the meaning of ancient texts and their constituent elements rather than to their active use, as in text production and learning ("Their aim was not to produce new texts in these languages; they wanted to understand the texts we had inherited from ancient times", Teubert, 2004, p. 78). Some implications of this are discussed below.

[7]This also includes *socioterminology*, which some authors posit as school of terminology with its own identity: "Socioterminology, as proposed by Gaudin (1993) applies sociolinguistic principles to terminology theory, and accounts for terminological variation by identifying term variants against the backdrop of different usage contexts. Parameters of variation are based on the social and ethnic criteria in which communication among experts and specialists can produce different terms for the same concept and more than one concept for the

dealing with similar phenomena (Pavel, 1993; Ahmad, 1996a; Ahmad and Collingham, 1996; Ahmad, 2008).

- Secondly, and this is more relevant in the present context, the specific study of terminology use in the social sciences as a subject-driven practice: Riggs, 1982b; Riggs, Mälkikiä, and Budin, 1997; Budin, 1996b.

In the latter regard *sociological terminography* appears to face a situation similar to *philosophical terminography*, which might be derived from the observation that both the social sciences and the human sciences in general seem to approach the discursive state that has long prevailed in philosophy ("In both social science and humanities, a general reassessment of epistemological groundwork has been gaining momentum, with an increasingly conspicuous impact on terminology", Beaugrande, 1993, § 4.1); another important communality is the presence of a generative motivation, which also sets this variety of sociological terminography *apart* from the passive orientation of *philosophical lexicography*:

> The descriptive approach has a learning orientation [...] we think of descriptive terminology management as learning-oriented, or perhaps as "heuristic". By transmitting information about concepts and terms used in a subject field, its intention is to help scholars find better conceptual tools to work with and to avoid the use of confusing terms to designate the concepts they have in their minds. Through this process, we hope that scholars will be able to communicate their ideas more clearly and precisely.
> Riggs, Mälkikiä, and Budin, 1997, p. 185

While this partly prescriptive (and partly restrictive: Fred Riggs, the founder of this specific approach, meant to restrict study to only "seminal works" and authors, Budin, 1996b, 157, my translation) intent is not fully applicable to *philosophical terminography*, it can point the way to a heuristic, synthetic practice of *philosophical terminography* that combines "free" interpretation (a prerequisite of learning) with a rigorous practice of documentation that can be partly formalized, and thus be adapted to some aspects of "traditional" terminography as *meta-codification:*

> For Riggs, the representation of sociological knowledge and its terminology in [onomasiological, PBN] specialized dictionaries is a central concern [...] the approach can be seen as text-oriented, as text fragments [Ger. *Belegstellen* ...] are to be documented for the terminological data collection [...] Text-oriented terminography can always be seen as *comparative*
> ibid, 156-157, my translation and emphasis

Considerations with regard to discourse production loom large, as can be seen above, and in Budin's interpretation that "social scientists are to be given an instrument that helps them designate their own concepts consciously and purposefully with the aim of facilitating communication with their colleagues" (ibid, 155, my translation). Besides occupying some of the desired

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same term", (Faber-Benitez, 2009, p. 113, also Cabré, 1999, pp. 210/211). We simply regard this as another variant that comes under the topical umbrella of sociological terminography; no disregard for the exponents of the school is intended – we simply forgo deeper review on account of the fact that this variant is mostly interested language planning, esp. in a Canadian context (ibid, L'Homme, 2006) and that its core tenets and findings have already been incorporated into our theoretical basis of sociocognitive terminology (Temmerman, 2000, pp. 31/32). It can therefore be seen as a precursor of this orientation, which is again a matter of *principle.*

middle ground between the extremes of (5.1) and (5.2), sociological terminography appears to be sufficiently empirically oriented to have brought forth innovative *procedures* that may be useful in a similar discursive environment. It has also generated a vocabulary for the formulation of its specific phenomena. It includes attempts at the designation and description of phenomena encountered in the discourse of social science that can be seen as achievements from the heuristic-phenomenological point of view. Some relevant components are:

1. the *paradigmatic* idea of *neosemanticism*, the "notion of an old word used to designate a *new concept*" (Riggs, 1982b, p. 244), and the realization that this seems to be a preferred mode of concept formation in the field: "With rare exceptions [...] social scientists prefer to use neosemanticisms [...] to designate the new concepts required for their work. As a result their writings seem [...] misleadingly to be intelligible to outsiders, and [...] ambiguous or obscure to insiders. The new meanings assigned [... are] only slightly different from the older meanings the same word [...] conveys. [... R]eaders may construe [... a neosemanticism] as an open rather than [...] fixed [...] failing to realize that it has a special meaning" (ibid, 245). From this we differentiate the *syntagmatic* end of the phenomenon,

2. the *retronym* (Ahmad and Collingham, 1995; Ahmad, 1996a; Ahmad and Collingham, 1996) or *retrospect lexicalization* (Temmerman, 1996; Temmerman, 2000, pp. 75/76, 106). A *retronym* is defined as "modification of an existing term to distinguish it from a neologism denoting a recent innovation" (Hartmann and James, 1998, retronym). While a *retronym* normally has a determinant when its coinage is recent ("natural language, virtual reality, terrestrial television", Ahmad and Collingham, 1995), the nucleus of such phrases may over time become used as a monolexical term which loses its determinant due to the habituation of the discourse community[8]. In this case, the *retronym* becomes a full *homonym* (*homophone* and *homograph*, Wüster, 1985, p. 80). Temmerman states that *retrospect lexicalization* might contribute to the formation of *umbrella categories* on the example of *biotechnology* (2000: 75/76; 106), which could be interpreted as a *gathering* (Lat. *concipere*) of "slightly different [...] older meanings" and radically new ones (1.1).

If we consider *neosemanticism* as a field-specific correlate of *concept* and *retronym* as analogous to *term*, we could construct a sign-model for field-specific phenomena of the social and human sciences (including philosophy). This would lead to the development of a perspective that allows the selection of useful *procedures* we could adopt for *philosophical terminography*. All that is now missing is an analog for *definition*, which can be found in a text by Hebenstreit (2007, 202-205, my emphasis). For a study on definition strategies in translation studies, Hebenstreit adapted Pawlowski's idea of *explication* as an informal definition strategy:

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[8]"Mail" instead of email may be an example from everyday life that most can recognize; in terms of radical constructivism, we may cite the replacement of `action scheme` (6 concordance hits for this type) by `scheme` (4) (159 hits) in the corpus of constructivism that we have created; this represents a ratio of nearly 1:10 in favor of the monolexical term. The phenomenon may or may not be due to semantically totally unrelated instances being counted alongside those which denote *action scheme*. The effects of this can also be seen in Wordnet Contributors, 2010: *assimilation*, s6, *accommodation*, s3, and *schema*/* scheme, s1 (s = sense index). While the first two entries list the Piagetian heritage explicitly in the sense definition, the latter merely states "an internal representation of the world; an organization of concepts and actions that can be revised by new information about the world", without any annotation or cross-reference to any of the other terms. This ad-hoc experiment gives some credence to Rigg's contention that readers – and lexicographers – might fail to *recognize* such terms.

Pawlowksi emphasizes the role of explications as a general defining strategy in the humanities. Explications are used to integrate (mostly) common language concepts into a scientific system of concepts. Different procedures (definition, partial definition, postulates) can be used to clarify and sharpen the common concept (Pawlowski 1980 : 181–182). [p. 202 . . .] An issue that is repeatedly brought up when talking about concepts in the humanities is that of vagueness (Budin 1993, Weissenhofer 1995 : 41–42, Riggs et al. 1997 : 184, for prototypicality in translation and Translation Studies cf. Halverson 1999 and 2002). Concepts in the humanities tend to have fuzzy borders. In some cases, this fuzziness may result from the applied method of definition. [p. 204] *Since these concepts are often mental constructions of abstract objects, there are no characteristics that are "objectively" perceivable.* If the concept's characteristics are not presented explicitly and in a concentrated form, it will be more difficult to fully grab the concept's content.

The dimension of definition or *defining context* (2.3.4.1) – which also encompasses *explication* – is paramount since social and human sciences deal with *immaterial objects* (compare the system/ model distinction; (4)): discourse about the object is constitutive of the object ("The object of the social sciences is mostly language-mediated, which means that it can only be analyzed using language. Language thus becomes the epistemic instrument (Ger. *Erkenntnisinstrument*) of the social sciences", Budin, 1996b, 154, my translation).

Practically, the defining statement is the *syntagmatic representation* of the concept, which can only be compared to other representations (or rather *presentations*, here again in the sense of Glasersfeld, 1987). Thus, a sign model must include the definition as a dimension.

This is the case for the so-called *extended semiotic triangle*, which was originally devised by Heidi Sounuuti and has since then occasionally been used and modified by theoretical terminologists (Antia, 2000, p. 96, Myking, 2001, pp. 50/51, Trippel, 1999, Neubauer, 2008). Incorporating *explication* as analog to definition, and assuming that the observer/ knowledge maker remains the self-same individual and that therefore the *concept* proper remains a constant element lodged in their *worldview* – in this case filling the slot of *object* – we arrive at this representation:
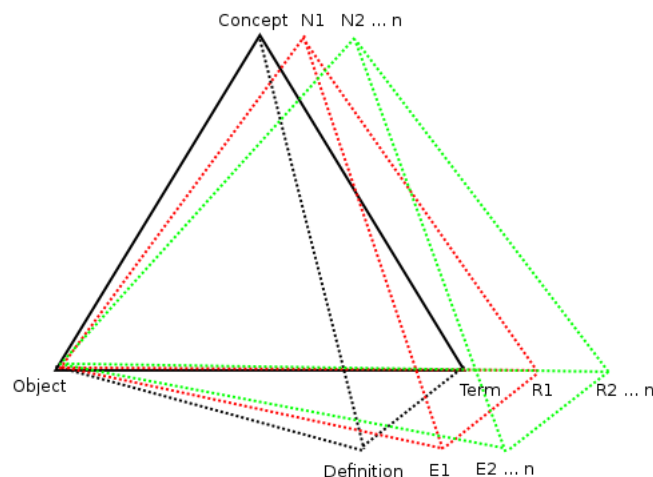
Figure 5.1: Extended semiotic triangle as sign-model for philosophical terminography. *N* denotes *neosemanticism, E* denotes *explication*, and *R* denotes *retronym.* Color-codes denote different relations constructed by different discourse participants whom the observer observes and interprets in relation to their *object concept*, which may be adjusted by the operation of a *scheme* (not shown).

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According to this interpretation, which procedures beyond those that overlap generic terminography or philosophical lexicography can be considered as candidates for adaption? Riggs, less concerned with concept formation in the individual (1982, p. 236), suggested the use of thesauri (which in this case are general purpose synonym dictionaries rather than information science vocabularies) to avoid the (from his perspective undesirable, from our perspective inevitable) phenomena of *retronymy* and *neosemanticism*; his term *auto-rhetoremic* (related to "problems involving lexical choice", Riggs, 1982b, p. 252) roughly corresponds to the selection and naming of *res* and *nota* during the *cogitatio* and *collatio* phases of our discourse-production perspective:

> Tools designed to solve auto-rhetoremic problems leave the writer (speaker) free to select any term that seems appropriate based on one's autonomous knowledge of what is suitable and will communicate the intended concepts. [...] A tool that, par excellence, helps one solve auto-rhetoremic problems is Roget's Thesaurus [... or a] set of synonyms - a list, a book, or a system of synonyms[.]
> Riggs, 1982b, p. 252

Thus, the *term* become the "stop of thought" (Florenski, cited in Alexeeva, 2003) or the endpoint of a cognitive process[9] ("product of thought") related to the structuring of an *argument* under the control of a *text-world model scheme*. That one should employ a general language thesaurus for term selection is indeed a novel *procedure* to suggest in the context of terminology research, and highlights the *generative* function of *sociological terminography*.

If we assume that our hypothetical model and/ or schematic representation of the controlling, nested *schemes* works for *both* interpretation and discourse production – which in *philosophical terminography* should be seen as two arbitrary stages in a circular process – then thesauri should be useful for helping interpret philosophical terminology (especially *homonyms*, *retronyms* and *inter-domain borrowings*, (3.3.1.2)) in the same way, that is, by providing alternative, synonymous *syntagmatic* choices for a denotative or connotative *paradigmatic* facet of the term's interpreted meaning. By way of empirical demonstration, this is what can be found in Roget's thesaurus under the lemma of *scheme*:

```
scheme [n1] course of action
arrangement, blueprint, chart, codification, contrivance,
design, device, diagram, disposition,
draft, expedient, game plan, layout, order, ordering,
outline, pattern, plan, presentation, program,
project, proposal, proposition, purpose, schedule,
schema, strategy, suggestion, system, tactics, theory;
SEE CONCEPTS 271, 625, 660
```

Figure 5.2: *scheme* in Roget's Thesaurus (Kipfer, 2000). Codes for the concepts denote the following in the thesaurus' own ontology: 271=FIELDS OF HUMAN ACTIVITY, COMMUNICATIONS, DOCUMENT, PHYSICAL OBJECT. 625=SENSES, VISUAL, PICTURE. 660=STATES, COGNITIVE, PLAN.

It is interesting to note that at least later editions of the thesaurus seem to be not only equipped with a *semasiological* list of synonyms (which Riggs calls "a synonymy", ibid.) but also with an *onomasiological* conceptual ontology not so different from that of information retrieval

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[9]While this is a cogent operational and metaphorical/ etymological definition of *term*, it raises the non-trivial issue of the exact unit in which *terms* should thus be measured.

thesauri (also distinguished ibid.). This gives us an additional handle to use the instrument as an interpretation and codification aid.

In Figure 5.2, we can see clusters of synonyms form around around different interpretations of the concept of *scheme*: Glasersfeld's interpretation, which we analyzed and codified at the beginning of Chapter (4) would possibly be best summarized by a combination of the following: *arrangement, plan, pattern* (Examples 4.1, 4.2), *strategy, system, theory* (Examples 4.6, 4.7), *order, ordering* (Example 4.4). The *paradigmatic* thrust in this case seems to be relatively unambiguous and unsurprisingly points in the direction of COGNITIVE STATE or PLAN.

By way of contrast, Piaget's translators from the French – which Glasersfeld criticized for their choices – seem to have had a different cluster in mind, which could be described as: *blueprint, chart, codification, diagram, design, schedule* expressed by the term *schema* and expressing a paradigmatic vector of VISUAL SENSE or PICTURE.

An approximation of Piaget's intended meaning is beyond the range of the data and experiment. In this regard it might be noted that our own *codification* of our interpretation of Glasersfeld's interpretation (4) attempts to be faithful to the discourse samples, but inevitably adds a distinct nuance in terms of our perspective. Given that we seek to make the concept of *scheme* operational in *philosophical terminography*, a re-ordering of properties in terms of what makes sense to us occurred (*A scheme involves three sub-processes: [...] recognizing situations [...] calling up the desired goal [...] selecting an existing action or reaction*) together with the expression of our interpretation in terms of a different metaphoric (from computing: *program, memory, nested*) which to some extent deliberately draws on indeterminate *retronyms*. Furthermore, we added *defining contexts* (2.3.4.1) on a low level of abstraction for the biological or cybernetic terms featuring in the definition. This may have resulted in an understanding that at best *fits* the original interpreter's (let alone the concept's inventor's) own understanding. It also serves as a practical demonstration of the *principles* we introduced as a framework, and therefore fits the present context of *procedures*.

Thus we have already entered the field of practical cognitive terminology in these experimental observations. Formulative concerns of this sort belong, strictly speaking, to the subfield of language engineering. This is the fourth and last component that a *philosophical terminography* should need to consider in terms of *procedures*.

5.4 Practical cognitive terminology

In terms of the use of the term *cognitive terminology* in what is to follow, it is important to flag up the following distinction, which is meaningful in terms of the continuum *theory – practice*, and should be received as analogous to our statement on sociological terminography. This provision is that *cognitive terminology* in this context is best regarded as another *homonym* with two senses:

- for one, an *umbrella category* for a family of philosophical or semantics-inspired *foundationalist* schools of terminology ((1.5), (3.3.2)),

- secondly, as an *umbrella category* for those practices and *procedures* associated with generic terminography which are described as either *knowledge engineering* (e.g. Example 2.4 in(2.3.4)) or *language engineering*.

In this sense, one could speak of *practical cognitive terminology*, or *cognitive terminography*. Since this chapter deals with the outline of a practice of *philosophical terminography*, only the second sense is relevant here. Within this provision, a further narrowing down of the senses of *language engineering* is on order. In terms of *philosophical terminography,* it should be understood as *discourse production* and considered in terms of applications and practices that facilitate *analysis-by-synthesis*, as demonstrated in (5.3).

5.4.1 Knowledge engineering

Knowledge engineering is a common term associated with the subfield of artificial intelligence that is concerned with "transferring expert human knowledge to the system" (Franklin, 1995, p. 277). As such, it can be seen as a quasi-synonym for *knowledge representation*, although *knowledge engineering* is apparently more concerned with the conceptual entities themselves, while *knowledge representation* seems more concerned with their structure:

> Typically, work in *knowledge representation* focuses either on the *representational formalism* **or** on the information to be encoded in it, sometimes called *knowledge engineering*. [... T]he central topic in *knowledge engineering* is to identify an appropriate *conceptual vocabulary*; a related collection of formalized concepts is often called an *ontology*.
> Hayes, 1999, 432, my emphasis

This aspect is rarely problematic as it can be seen to collapse into the practices of generic terminography. This seems to be broadly recognized:

> *A typical knowledge engineers work* [sic!, PBN] *in many ways like terminologists.* For instance, they collect and catalogue the so-called domain entities in a manner that is similar to the building of glossaries or term lists. [...] Some knowledge engineers draw *complex hierarchies in which objects are organized in* inheritance *networks* and/or partonymies, a process that resembles the development of *conceptual structures* in terminology management.
> Ahmad, 2001, 821, my emphasis

An example for an informal ontology can be found in Figure 4.3, which should however be seen through the lens of second-order cybernetics: the *system* is not the *model*. In terms of the terminology used, the *schema* – a term that like the adjective *schematic* has been used frequently so far – is not identical to the *scheme*. The *schema* we have presented has been designed so that a variety of conventional models or entities (*worldview*, *thick concept*, *meta-scheme*, *scheme*, *text-world model*, *discourse-world model*), goal structures (*theory*, *principle*, *approach, procedure*) and actions or process concepts (*control, abstract, extrapolate*) could be bound together and structured in a coherent visual model. This was subsequently "translated" into a coherent stretch of text. Our model is hypothetical and speculative, and it would amount to a statement of indefensible nonsense if we claimed that our model *really* represents what *actually is* inside – even the present author's, much more other people's – mind. In other words, the *schema* is not the *scheme*.

Our *embodied worldview* cannot *literally* be transferred to the diagram, the written page, or any other artifact; at best, we might suggest a possible – i.e. *viable* – *explanation* based on processes of introspection and experimentation. Both of these processes are in turn based on *interactions* between "black boxes", the one being the experiential object proper, the other our

mind. From this point of view of "the transferring [of] expert human knowledge to the system" becomes problematic. It can hardly be considered surprising "that only rudimentary levels of expert behavior can be captured by explicit rules and facts" (Dreyfus, cited in Riegler, 2007).

While practitioners of artificial intelligence can likely deal with this problem or have an intuitive grasp of it, interpretations of terms and practices like *knowledge engineering* become precarious when they begin to travel beyond their fields by mechanisms of *import* or *inter-domain borrowing*. An example for this can be found in the visionary, though little known[10] paper "Terminology vs. Artificial Intelligence" by Paul Wijnands (1993). Its author anticipated a few aspects that have found treatment or reception in terminology research only a few years later in the wake of the "computational", "sociological" and "cognitive turns" of the discipline (Gerhard Budin, in Antosik, 2013) as well as through the emergence of sociocognitive terminology. Among them are, e.g., the study of *prototype* concepts (ibid, 169) – which relates to the first sense of *cognitive terminology* – and the difficulty of applying traditional classification systems to problems of *ontology engineering* – another synonym for *knowledge engineering* and *knowledge representation* – which relates to the above.

The gist of the argument there is that terminology research as a discipline needs to approach artificial intelligence both conceptually and practically, and vice versa. The interesting point, however, is the *understanding* of *artificial intelligence* which seems to underlie the following claim:

> By means of *entirely automatic processes*, artificial intelligence aims to ***simulate human intelligence*** as it manifests itself in the *understanding* of **all reality**, *concrete or abstract*, with which human beings are confronted.
> Wijnands, 1993, 166, my emphasis

This understanding overstates a mostly discredited view of artificial intelligence's paradigm (see, e.g. Manteuffel (1992) for an early critical assessment) and thus provides some support for our constructivist-inspired idea of interpretation as *human* "meta-conceptual simulation" or the partial explicitation of *worldview construction*. How can this be explained?

What seems to have entered Wijands' *worldview* as a central tenet is the idea of *cognitivism*, which holds that the human mind is essentially an *information-processing machine* (Riegler, 2007). If this metaphor was literally correct, then not only the *worldview* itself, but also all cognitive mechanisms to build it could be replicated by the techniques of *knowledge engineering* or *knowledge representation*; however, it has been observed that only "rudimentary levels of expert behavior can be captured by explicit rules and facts". This is an assessment that is also shared by practicing terminographers:

> [W]hile the final results of terminology research may be based on knowledge, they are *not systematically encoded as knowledge*. Rather, most of the subject-field knowledge so laboriously acquired by the terminologist unfortunately stays where it was first stored, namely in the terminologist's head. Only fragments of it are retained in definitions or examples[.]
> Meyer, Eck, and Skuce, 1997, p. 98

These aspects of knowledge engineering point to a different problem, i.e. the *human-computer dichotomy*, whose detailed treatment must be relegated to further research insofar as it cannot be

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[10]As of my writing this (23 June 2013), Google scholar showed about 3 (!) citations for the article and about 31 for the edited book in which it was published.

construed as generic function of diverging *agendas* (7), *codification mentalities* (8) or any other of the more preliminary considerations in the present work. Insofar as knowledge engineering is an aspect of philosophical terminography, its obvious application would be in concept structuring tasks like the exemplary effort in (4.3). We are however not concerned with the *principles* of knowledge engineering, but with its *procedures*. This means that we select existing *procedures* and *assimilate* them to our own *principles* in terms of the *praxeology* of *philosophical terminography*.

Even considering that an inferential algorithm for the construction of *maker's knowledge* and a *worldview*[11] is out of reach[12], *knowledge engineering* nevertheless has a place in *philosophical terminography*. For one, we use knowledge engineering *products* like semantic networks (Word-Net; see (3.2)) as *aids* for reasoning about conceptual relations and interpreting philosophical terms. As Meyer et. al. above suggest, such products can be seen as being *based on knowledge*, even though they cannot *transmit* knowledge. Secondly, we use a *theory of mind* for the purpose of constructing speculations about the wider social reality. This action may be *understood* in terms of *simulation*, albeit not quite in terms of computational simulation. With regard to both aspects, the considerations start with the limits of their projected *viability* or "the constraints within which equilibrium can be maintained" (Glasersfeld, 2002). In terms of interpreting linguistic meaning, "semantic compatibility" can also be seen as a "fitting within constraints", (Glasersfeld, 1992).

5.4.1.1 Theory of mind

In this sense, discourse production is analogous to *information production,* which is assumed in what could be considered the constructivist *theory of mind*:

> The branch of cognitive science that concerns our understanding of the minds of ourselves and others has come to be called "theory of mind," though it should perhaps be called "theory of theory of mind." It involves psychological theorizing about our ordinary, intuitive, "folk" understanding of the mind.
> Gopnik, 1999, p. 838

Given that *thick concepts* like *scientificity* and *disciplinarity* and their adjunct *schemes* of *text-world model* and *discourse-world model* are supposed to control the production of discursive cognitive artifacts, it is essential to understand that exercising the *meta-scheme* component of the *thick concepts* presupposes an *understanding of other minds* – or rather the ability to construct internal models of them – on the part of the human terminographer and discourse producer. It is this essentially human feat that exceeds the capabilities of formal encoding and machine simulation.

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[11]Telling in this regard is the term *microworld*: "Philosophers often build their ontologies from the top down with grand conceptions about everything in heaven and earth. Programmers, however, tend to work from the bottom up. For their database and AI systems, they often start with limited ontologies or microworlds, which have a small number of concepts that are tailored for a single application", Sowa, 1999.

[12]This also holds for the prospects of a fully automatic, high quality generation of discourse; readers are referred to `http://www.elsewhere.org/pomo/` for their amusement. With regard to the possibility of *simulating* the human intellect, Weizenbaum (1976, pp. 213/214) noted: "There is, however, still another assumption that information-processing modelers of man make that may be false, and whose denial severely undermines their program: that there exists one and only one class of information processes, and that every member of that class is reducible to [...] information process[ing ...] formalisms. Yet every human being has the impression that he thinks at least as much by intuition, hunch, and other such informal means as he does "systematically", that is by means such as logic. Questions like "Can a computer have original ideas? Can it compose a metaphor or a symphony or a poem?" keep cropping up."

In terms of our model, the human cognitive models or *simulations* are deployed in the arranging of text objects (*res*) and annotations (*notae*) and in the design (*divisio*) of the discursive artifact. For selecting our *procedures,* we might as well look into how the *process of simulation* is thought to work.

The constructivist *theory of mind*[13] holds that knowledge relating to the social and experiential reality a person inhabits is constructed along the lines of two principles: for one, the principle of *goal-directedness* ("Cognitive organisms do [...] develop attitudes towards their experience because they like certain parts of it and dislike others. [...] human actions become goal-directed in that they tend to repeat likeable experiences and to avoid the ones that are disliked", Glasersfeld, 1995, pp. 113/114) and secondly, the assumption that past experiences reflect *regularities* which are bound to repeat ("One kind of knowledge [...] is knowledge of what has worked in the past and can be expected to work again", ibid, 114).

Given that these principles are seen to be developmentally ingrained (based on "the Piagetian idea that some of the concepts that determine the structure of our experiental [sic, PBN] world are constructed during the sensorimotor period, prior to the age of 2 years, when we are anything but aware of what we are building", ibid. 118), it follows that *expectations* regarding future experiences are arrived at by projecting the recalled results of past experiences into the future (when "there is experiential knowledge of how to bring the desired end about[, t]his knowledge can be mapped as the re-presentation of an established cause-effect connection, and it is this re-presentation, projected into the future, that now becomes the cause of the activity that is believed to bring about the end", Glasersfeld, 1990d; compare to definition of *scheme*). Apparently, this assumption follows from the second principle and loops back into the premise of *goal-directedness*.

We might take this as another application of *scheme* theory if we compare it to our samples and definition (4). It is at this third stage – the projection of past regularities into the future – that an actual act of *simulation* is assumed to take place. Here, a future scenario is arrived at by fusing the abstracted regularities of past experience with the concrete expectations of future results on the basis of the experiential present. For this reason, we may categorize this *theory of mind* in the category or family of theories which is subsumed by the term *simulation theory of mind*:

> The simulation (or "mental simulation") theory [... holds that] human beings are able to use the resources of their own minds to simulate the psychological etiology of the behavior of others, typically by making decisions within a "pretend" context.

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[13]The choice of this term to denote the necessary generic category can now seen as an *auto-rhetoremic* problem in *philosophical terminography* since the term *theory of mind* is never used by Ernst von Glasersfeld in the corpus of constructivism or in the main work, Glasersfeld 1995, not even inside the dedicated chapter (ch. 6, "Constructing Agents: The Self and Others"). The term *simulation* only occurs once together with a co-text that would allow such inferences: "Children at about the age of three can sometimes be observed to grab a small object, push it along the surface of the floor or table and accompany this movement with a sometimes remarkably well done imitation of engine noise [...] Even though this performance requires the transfer of conceptual properties [from one structure to another, PBN], I wouldn't consider it a metaphor, but rather within the category of **simulation**. The child never believes the object to be an actual car, but chooses to regard it temporarily as such.", Glasersfeld, 2006, my translation (Ger. "*Kinder um das Alter von drei Jahren nehmen zuweilen einen kleinen Gegenstand in die Hand, schieben ihn auf dem Boden oder auf dem Tisch entlang und begleiten die Bewegung mit einer oft recht guten Imitation von Motorenlärm [...] Obgleich diese Vorführungen eine begriffliche Übertragung verlangen, möchte ich sie doch nicht als Metaphern bezeichnen, denn sie passen weit besser in die Kategorie der **Simulation**. Das Kind glaubt keineswegs, daß der sich bewegende Gegenstand ein Auto ist, doch es betrachtet ihn vorübergehend als Auto*"). Case examples like this provide support for the viability of the experience-derived conventions of interpretative *philosophical lexicography*. However, we can assert that an act of *interpretation* would not be initiated if not prompted by *documentary* data, which in constructivist terms constitute a form of *perturbation*.

> A common method is role-taking, or "putting oneself in the other's place." [...] Simulation is often conceived in cognitive-scientific terms: one's own behavior control system is employed as a manipulable model of other such systems. The system is first taken off-line, so that the output is not actual behavior but only predictions or anticipations of behavior, and inputs and system parameters are accordingly not limited to those that would regulate one's own behavior. [...] The simulation is [...] said to be process-driven rather than theory-driven (Goldman 1993)[.]
>
> Gordon, 1999, p. 765

Insofar as *projection* is concerned, the *simulation* involves the manipulation models of the environment and others, which can be seen as "the resources" of the subject's "own mind". In terms of the system/ model distinction, a technical reformulation of the principle can be found in the statement that "veridical access epistemological access to reality is denied" (Ortony/ Temmerman, (1.4.1)).

In terms of *procedures* that are based on *simulation*, the most important one from the vantage point of *philosophical terminography* is the construction of semantic networks, which could be framed in terms of the constructivist theory of mind – hence, we assume that the semantic network aims to *simulate* the semantic associations (e.g. the "psycholexicological" approach of WordNet, (3.2)) in a *hypothetical speaker* of the language whose vocabulary the semantic network intends to represent. We have already attempted to exploit this *simulation* for the purpose of inducing the kinds of *stereotypes* that might be ascribed to that hypothetical speaker (3) and have therefore already become users of a *knowledge engineering product*. By contrast, we could say that the *construction* of such artifacts is the province of *knowledge engineering* proper.

5.4.1.2 Semantic network

We have hitherto frequently made use of WordNet, a tool that could be categorized as a *semantic network* ((1.4.1), (2.5.1), (3.2), (5.3)). Although a deeper problematization has not taken place so far, we have discovered some of the limitations of reasoning with the help of such instruments experimentally. These limitations include, e.g. circularity and lack of context.

Given the – impossible – requirement that such *knowledge representation* products should successfully simulate *all* experiential reality and thus "transfer" it to the computational system, these networks could be considered unsuccessful implementations of a *theory of mind*. In practice, however, this is not a flaw as the component of intelligence necessary for interpretation and knowledge construction will be provided by the human operator. Analogous to the *semasiological* use of thesauri to solve *auto-rhetoremic* problems (5.3), *semantic networks* help – due to their logical, hierarchical structure – in approaching problems from the *onomasiological* perspective (1.3.3). A *semantic network* is a

> Frequently used form of knowledge representation that uses a *graph-like notation system*. Originally developed to model associative memory, semantic networks have evolved into general knowledge representation schemes. Semantic networks represent by using a *hierarchy of concepts organized by a primitive relation such as 'is A' or 'PART OR'*. Further two-place relations (roles) are defined by using these. The main task in developing semantic networks consists in establishing the *inventory of semantic relations between concepts*. Simple semantic networks are formally a *restricted variant of predicate logic*.
>
> Bussmann, 1996, semantic network, my emphasis

This is the opposite direction as seen from the *semasiological* approach that is suggested by thesaurus use, given that not all general language thesauri incorporate a auxiliary *onomasiological* component such as we found in Roget's (2000). For example, any *onomasiological* component is absent from *Moby's thesaurus* (2011), which however compensates for this shortfall by including a much broader range of synonyms.

If we approach problems of *interpretation* and *discourse production middle-out*, then we would need to make a relational use of either instrument. In this case, we would supplement the *semasiological* perspective already built into WordNet by way of lexical relations (3.2) by supplying additional synonyms from the alternative instrument. As the act of interpretation also requires the evaluation of discourse data – representing the "context" into which "conventional meanings" are inserted (4) – we need to account for *procedures* to accomplish this feat as well.

As should emerge from the foregoing, *philosophical terminography* should be seen as a *synthetic* approach to *regenerative theory construction* that *combines* all necessary inputs (*theory*, *principle*, *approach*, *procedure*) and formulates their relations in a discursive artifact. This is strictly speaking the domain of *language engineering*. However – as previously suggested – this understanding requires taking stock of the conventional extension of the concept as well as performing another action of *assimilation*.

5.4.2 Language engineering

While the *knowledge engineering* aspect of practical cognitive terminology can be explained in a relatively consistent manner, the second, more important aspect of *language engineering* seems to be surrounded by confusion, which apparently stems from difficulties in delineating it *syntagmatically* from *language technology* (i.e. fundamental cultural techniques based on language, especially writing systems) on the one hand and *onomasiologically* from *knowledge engineering* at the other. Here, we could point to the example of Wright (2002), who distinguishes sharply in the first but barely or not at all in the second regard. In her analysis of the *language engineering* concept, "ontological systems" are listed as applications of *language engineering*, rather than of *knowledge engineering* or *knowledge representation*. Additionally, there seems to be a problem of differentiating *language engineering* from the field of *natural language processing* and *computational linguistics* on the more language-oriented end of the spectrum. If the concept of *language engineering* is to be incorporated into our conception of *philosophical terminography* as a productive element, this situation needs be resolved by devising some *interpretation*.

5.4.2.1 Syntagmatic definitions of language engineering

In order to effect it, we start from *syntagmatic explications*, e.g. this collection of discourse samples (definitions and *defining contexts*) in order to highlight this observation:

(5.1) *Language engineering*, at least in the context of this paper, would refer to the engineering and use of systems that help us to manage to the building blocks of specialist texts, the terminology of the specialist domain. (Ahmad, 1996b)

(5.2) *Computational linguistics*, also labelled *language engineering, human language technology or natural language processing* (henceforth *NLP*) is a discipline that is situated at the crossroads of language sciences, computer science (including AI) and cognitive sciences. (Deville, 2001, p. 199)

(5.3) Sager points out early in his treatment of the subject that he sees the *function of language engineering* both in terms of *processing languages* and in *producing languages* [...] Sager examines the language industry from the viewpoint of *computational linguistics* (*CL*) on the one hand and *natural language processing* (*NLP*) on the other, and posits the latter in the domain of information technology. (Sager, cited in Wright, 2002)

(5.4) The *application of knowledge of language to the development of computer systems* which can *recognize, understand, interpret*, and *generate human language* in all its forms. (Diver, cited in Wright, 2002)

(5.5) Melby does not, however equate *NLP* [natural language processing] per se with LE [language engineering]. In his view, "NLP starts with mathematical models of formal languages and attempts to adapt them so that they are close enough to natural language so that they are useful," whereas "LE starts with authentic natural language and attempts to 'engineer' people to use language differently (e.g., more consistently)". (Melby, cited in Wright, 2002)

We can see that these samples introduce the entities *natural language processing (NLP)* for explanation by synonymy (Example 5.2) or opposition/ differentiation (Examples 5.3, 5.5). In the case of the latter, the boundary relates to *natural language processing (NLP)* on the one and *computational linguistics (CL)* on the other hand. Another definition or explication strategy used seems to consist in defining *functionally*, by introducing goal-statements analogous to those used to explain *knowledge engineering* (Examples 5.3, 5.4; the latter seem to be no less ambitious than Franklin's definition, above).

5.4.2.2 Paradigmatic definitions

The introduction and naming of these additional entities provides us with the opportunity to set the examples above in relation to other definitions associated with the terms *computational linguistics* and *natural language processing*. In this case, the definitions have been formulated from a more *paradigmatic* point of view[14]. They were taken from the *systematic dictionary of corpus linguistics* (2013):

> **Computational Linguistics (CL)** *A branch of linguistics in which computational techniques and concepts are applied to the elucidation of linguistic and phonetic problems.* Several research areas have developed, including speech synthesis, *corpus linguistics*, speech recognition, *machine translation*, concordance compilation, testing of grammars, and many other areas where statistical counts and analyses are required.
>
> See Newmeyer 1988: Ch. 11; McEnery 1992; Souter and Atwell 1993.

Apparently, the definition emphasizes the perspective of *processing language*, since the *encoding* of "linguistic and phonemic problems" is imperative for solving them by *simulation*. We can interpret *computational linguistics* therefore as an area that is concerned with the operationalization of linguistic theories in computer models or the "translation" between theories and

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[14]The "Systematic Dictionary of Corpus Linguistics is an attempt to group, systemize, define and explain the basic English terms in Corpus linguistics and relative fields", Centre of Computational Linguistics, 2013. The dictionary, or rather glossary, was obviously compiled by extracting and summarizing salient properties from specialized literature, which highlights again the function of dictionaries as discourse (1).

models. This overlaps the idea of "processing language" (Example 5.3), even if *processing* there entails the *processing of models of the language system*, rather than the *processing of discourse* (Example 5.5). "Discourse processing" is however exactly what is suggested by the enumeration of "speech recognition, [...] corpus linguistics, concordance compilation". The definition presents a picture as confusing as that which emerges from the discourse examples insofar as it is now the field of *computational linguistics* that is said to overlie *natural language processing* in the area of *machine translation* and *corpus linguistics*:

> **Natural Language processing (NLP)** A general term used to refer to all processes related to analysis of texts in natural languages (natural language - imitation of a human language by a machine) as well as their understanding and synthesis with human language. *Natural Language Processing is closely related to the other fields of Computational Linguistics*: *Machine Translation* (MT), Artificial Intelligence (AI), *Corpus Linguistics*.
>
> See Sparck Jones 1992; Galliers and Sparck Jones 1993; Rustin 1973.

Furthermore, the hierarchy of fields suggested here is problematic, as it is not clear whether or not *natural language processing* should be seen as a sub-ordinate (as in the definition of *computational linguistics*, which considers *CL* a branch of "linguistics") or a co-ordinate field of *computational linguistics* (this is at least implied in Example 5.3), or whether we should consider *all* of these terms to denote in fact the same area of activity (Example 5.2). The latter interpretation could be supported by a *prototype* view[15] based on the observed *repetition* of the terms *corpus linguistics* and *machine translation* as parts of the extension of either definition. This also recurs implicitly in a third one, in this case relating to *language engineering*:

> **Language Engineering (LE)** *The aim of Language Engineering (or sometimes can be referred to as language technology) is to facilitate the use of telematics applications and to increase the possibilities for communication in and between world languages by integrating new spoken and written language processing methods.* Language Engineering covers the following action lines: (i) creation and improvement of pilot applications (document creation and management, information and communication services, translation and foreign language acquisition); (ii) *corpora*; (iii) language engineering research; (iv) support issues specific to language engineering (i.e. standards, assessment and evaluation, awareness activities, user surveys).
>
> See Andersen 1995; Cohen et al. 1990.

As noted, the idea of *corpora* appears again (*concordance compilation*, *corpus linguistics*), whereas the idea of *machine translation* can be seen as implicit in "*telematics applications*" which "*increase the possibilities for communication in and between world languages by integrating new spoken and written language processing methods* [... and] *translation*". As if to further confound the analyst, *language engineering* is here regarded as a *synonym* for *language technology*, contrary to Wright's (2002) distinction.

However, we find the notion of the "creation and improvement of [...] applications [for] document creation and management" cogent with the argument of Example 5.1. The idea of "awareness activities" which suggests that people should be coaxed into *adapting* to those applications and so be "engineered" to use language – especially terminology – in ways that are more supportive of the *procedures* of *language engineering* is implicit in Example 5.5.

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[15]In this case, we can categorize the definition of *computational linguistics* as expressing an *umbrella category*, and that of *natural language processing* as expressing an *activity-related category* under its umbrella.

All things considered, the experiment has not so much facilitated the selection of *procedures* from *language engineering* than provided *perturbations* to *accommodate* an idea that will be presented as our reinterpretation of the concept. Before we present it, we will make a final attempt at constructing an interpretation that is perhaps best described as a variant of *formal concept* analysis (1.2.4.1).

5.4.2.3 Statistical data

Given that the last definition of *language engineering* suggested a subject area that is circularly concerned with "support issues specific to *language engineering* [... e.g.] *standards*, *assessment* and *evaluation*, awareness activities, *user surveys*", it might be rewarding to look to the textual material of assessment and evaluation reports and user surveys for clues as to what the activities in question entail. Then, their lexis could be evaluated *quantitatively* by counting the frequency of the respective terms, or by making sure that the terms in question occur in the first place. For the following, we have selected two reports: EAGLES Evaluation Working Group 1995, which is, as the title suggests, concerned with the "evaluation of natural language processing systems", and Cole et al. 1996, a "survey of the state of the art in human language technology". Working on the "synonym theory" expressed by Deville (Example 5.2), we obtain the following frequency data:

Type	EAGLES1995	COLE1996	Total
computational linguistics	4	155	159
natural language processing	18	91	109
language engineering	40	10	51

Figure 5.3: Frequency data in an ad-hoc corpus compiled from EAGLES Evaluation Working Group 1995; Cole et al. 1996. Displayed are counts for the types `language engineering`, `natural language processing` and `computational linguistics`. Abbreviations and derivations have been ignored.

If one does regard *language engineering*, *natural language processing* and *computational linguistics* as synonyms, then the frequency count tells us that `language engineering` is the relatively least frequent type, although it always occurs *together* with the two other units. If one assumes – like most producers of the *syntagmatic* and *paradigmatic explications* and definitions above – that the terms are used to denote different areas, then this procedure of approaching a corpus *statistically* (as suggested in all *paradigmatic* definitions of the terms) *does not shed any light* on the delimitation of the field and therefore the identity of *procedures* from the area that are to be investigated.

A cursory glance at the concordance lines on which the statistic is based also reveals that many instances of the types `computational linguistics` and `natural language processing` really signify the proper names of publications cited. They would therefore count as *named entities* (defined on page 164) which represent invariants beyond the author's *auto-rhetoremic* choice. Therefore, the selection of the terms would in the final analysis not be controlled by their *text-world model* or anything above this level, though the frequent reception of the terms *may* have an impact on the formation of their *discourse-world model*.

5.4.2.4 Reinterpretation of language engineering

We can now see that there is considerable variance in the *explications* and definitions presented. While it would be simple to adopt any one definition and either ignore the others or *assimilate* them to that understanding, this would contradict the principles stated at the beginning of the chapter.

As we have been exposed to the information that we constructed in the process of incorporating all the materials into our document in the first place, we can state that some concept of *language engineering* has been present in our *conceptual system* or *paradigmatic worldview* all along, and that some *accommodation* of this concept must have taken place during our discussion and analysis.

What remain to done now is its formulation by *meta-codification* (5.1) and *codification* (4.2.2) of a description or model of this interpretation in terms of the aim of identifying *procedures* from the area of *language engineering.* These, in turn, can be harnessed to the conceptual construction of *philosophical terminography* by a "gathering" of their properties.

In this regard, we can state that the *syntagmatic* discourse examples and the *paradigmatic* definitions suggest either of the following understandings:

1. *Language engineering* does not relate to the *processing of language* or *discourse* itself, but rather to the instruments and techniques used for this *processing* (Example 5.1); this view subsumes:

   a) the idea that *natural language processing* belongs to the domain of information technology (Example 5.3), and can thus be seen as a synonym of *language engineering* (Example 5.2). This however requires the exclusion of all other aspects, especially the mathematical modeling of formal or natural languages (Example 5.5), and

   b) the aspect of *language engineering* in the *paradigmatic* definition from Centre of Computational Linguistics 2013, which emphasizes the "creation and improvement of pilot applications [for] document creation and management, information and communication services, translation and foreign language acquisition", again at the expense of less *prototypical* activities (*evaluation*, etc.) at the periphery of the definition.

2. The choice of terms is not motivated by conscious selection, and the three terms denote the same field of activity; this field is an inter-discipline of linguistics, artificial intelligence and cognitive science (Example 5.2) which is cogent with our observations on *knowledge engineering* (Example 5.4.1).

3. Language engineering is an *application* (applied field) of both *natural language processing* and *computational linguistics* (Example 5.3), which on this perspective should at least be seen as coordinate subfields of linguistics (or nested beneath it, with *computational linguistics* as generic field containing *natural language processing*). This would follow from the *paradigmatic* definitions of *computational linguistics* and *natural language processing.* The interpretation however clashes again with that of Example 5.5, which suggests that *natural language processing* has indeed little to do with linguistics.

4. Abandoning all particulars, we accept that *language engineering* is the attempt to make computers competent interpreters and speakers of natural languages (Example 5.4). This

in turn would be a subtask of simulating actual human intelligence and inherit all the problems pertaining to this approach (Wijands, (5.4.1)). *Language engineering* would thus become a subfield of a particular research program in *artificial intelligence.*

Thus, the understandings have been *codified* and partially ordered. Comparing them against our *principles* and *approaches* as well as against the *procedures* so far adopted should lead to the following observations:

- Against the point of view that concepts are indeterminate unless constructed and the perspective that holds that specialization constitutes an "ignorance arrangement" that allows us to relegate the finer points of fields like *computational linguistics* and *natural language processing* to the respective experts and draw on their expositions only if necessary, we adopt interpretation (1) on the premise that *language engineering* provides products and techniques that are *viable* both with regard to *worldview construction* (i.e. for keeping the interface to other areas of expertise open) and discourse production (by allowing argument structuring and "computer-aided interpretation");

- That *language engineering* provides *procedures* to be associated with *principles* and *approaches* follows from perspective (4). In this regard, it can be stated that corpora, corpus creation and exploitation tools and potentially corpus-derived works of reference like thesauri and semantic networks can be seen to benefit

  - Generic terminography, whose hard-coded templates (termbases, etc.) can be seen as classical *language engineering* products;

  - Philosophical lexicography, where corpus-parsing tools are used to generate the concordances and indices associated with *documentary dictionary-making practices.* As should have been demonstrated in this chapter, there should also be some potential in their use for *interpretative codification;*

  - By the same token, sociological terminography, where, as noted, a special role falls to thesauri. They can be prepared in digital form (e.g. Moby contributors, 2011) and thus become part of *language engineering* techniques.

  - The task of *knowledge engineering*, insofar as the construction of semantic networks can be advanced by the methods of *(meta-)codification* associated with generic terminography.

In this short assessment, we have however neglected the specific aim of discourse production in the service of a *regenerative theory construction.* This goal requires that *language engineering* is once more *integrated with*, rather than *distinguished from* the wider background of *language technology*, as it is again implied in the definition of the *systematic dictionary* (2013).

As Wright (2002) noted, *language technology* represents – at least when compared to the contemporary understandings of *language engineering* – a "much older, even ancient, development" in human language use. Her definition runs as follows:

> Language technology involves the use of special materials and processes to facilitate the recording, reproduction, and to some extent, manipulation, of human language. [... T]he mechanics of language technology do not necessarily provide the tools for automatic manipulation and reformulation (as opposed to mere reproduction of sounds or images) of the semantic information expressed by language.

As our *principles* suggest, there seems to be no way of manipulating "the semantic information expressed in language" other than by *interpretation*. Interpretation is an intelligent cognitive activity and thus unlikely to be automated any time soon ((5.4.1), (3.5)).

An activity that *can* however be automated and "engineered" is the *manipulation of symbols*; *writing* can be seen as the most basic language technology available for this task[16]. It underlies all *(meta-)codification techniques* to some extent and thus includes, e.g. the generation of templates for structured codification tasks. Compared to the process model of scholastic discourse production, the engineering metaphor can be *extended* to encompass discourse production as *language engineering*. Although this may produce an unusual description, it is not without precedent. For example, Certeau (1984, 135/136, my emphasis) remarked with regard to the nature of writing that:

> Linguistic fragments or materials are treated (*factory-processed*, one might say) in this space [the blank page, PBN] according to methods that can be made explicit and in such a way as to produce an *order* [... writing] *composes* the *artefact* of another "world" that is *not received but rather made* [...] either an *item of information* received from *tradition* or from the outside is *collected, classified, inserted* into a *system* and thereby *transformed*, or the *rules* and *models* developed in this place [...] allow one to *act on the environment and to transform it*.

This view is also amenable to the idea of *maker's knowledge*, insofar as the active construction of a discursive artifact – analogous to, e.g. the construction of a *worldview* component – is emphasized.

With regard to the distinction between the two forms of *maker's knowledge* – i.e. the *paradigmatic*, or *worldview component*, and the *syntagmatic*, or *discursive artifact* – we might say that the former emerges "naturally" from our interaction with objects in our *experiential field*[17], while the later requires a higher-order construction. This higher-order construction, which could be considered as the construction of model of a another construction (compare Figure 4.1) can be seen as thoroughly *artificial*, in the sense of appearing as a deliberately *engineered* object. For this reason, we might activate H.A. Simon's (1996, 5, my emphasis) understanding of *the artificial* for the explanation of *language engineering procedures* in *philosophical terminography*:

1. "Artificial things are *synthesized* (though not always or usually with full forethought) by human beings"

2. "Artificial things may *imitate* appearances in natural things while lacking, in one or many respects, the reality of the latter."

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[16]That the distinction of concept- and symbol manipulation should not be reduced to a simple dichotomy of *either/ or* follows from the observation that the act of symbol manipulation has been observed to bring about a reconfiguration of parts of a person's *worldview* or *conceptual system*. Budin (1996b, 93, my translation) remarks that what he calls *epistemic writing* (2.5.5.1) has "the special property of reflective thought" since "the author can become aware of the reflective process while writing, by thinking about the text already written, and so expand their own knowledge". Hebenstreit (2007, p. 207) interpreted the same passage to mean that "academic texts [...] reflect the epistemic process behind that knowledge [... and] act as a primary epistemic tool when the author uses the text to intentionally reflect his or her own argumentation, which leads to a new level of understanding". From the perspective *interactive concept analysis* or *regenerative theory construction*, it must however be noted that what seems to act on the process of *understanding* is the *interaction* with the codified product and not the symbols themselves.

[17]This *experiential field* is not to be confused with the *ontic* "environment" but rather relates to past distinctions in experiential space that an observer can recognize and call up. Thus, the *experiential field* is populated with internal constructs treated *as if* they were external objects: "we construct a model of a world, externalize it, and then treat it as though its existence were independent of our doing", Glasersfeld, 1995, p. 123. See also considerations in Chapter (1)

Besides serving as a reminder the importance of system/ model distinction, the following should emerge: if the knowledge seen as comprising a *worldview* is *artificial* in the sense of *maker's knowledge and* any higher-order models of it are seen to *imitate* some aspect of this knowledge by methods of discourse production – which entails the "factory processing" of "items of information" intended to produce a "linguistic facsimile" of the knowledge elements as the writer represents them by means of *language technology* or *language engineering* – then we can develop a "bottom-up" view of *philosophical terminography* as the active construction of discursive cognitive artifacts. This takes us back to the yellow-shaded areas of Figure 4.3 (on page 107). Here, we can insert *language engineering procedures* as an *aspect of the application* of the *schemes* of *discourse-world model* and *text-world model* to the shaping of the artifact.

5.4.2.5 Application of discourse-world model

In terms of the *system* (i.e. a subject's *worldview*), understanding by imitation, or rather *simulation* is in principle more basic than the actual computational modeling of the epiphenomena of this understanding. It entails the use of the facility of *theory of mind* (5.4.1.1). At the very minimum, this facility would be used to *simulate* the *viability* of some terminological choice (subsumed by the ideas of *appropriateness* (2.5.5.4) and/ or *acceptability* (3.5)) on the basis of extrapolation from past experience, i.e. interpretations of units which have already been encountered ("what worked before will work again"). This objective seems however to be balanced against other cognitive goals. The emergence of *retronyms* (5.3) can perhaps be seen as a compromise between interpretative adequacy and *acceptability*.

Besides this, the process involves the manipulation of *stereotypes* (2.5) and other cognitive simplifications of *contingent* ("idiographic", (7.1.1.2)) phenomena in order to deduce an *imaginary* intersubjective *semantic system* ("a type of social system that is based on the collective construction of sense and meaning in society", see critique in (6.1.2.1)) on the side of the *model.* This is the application of the *sociological imagination* that underlies subject categorizations and an account of it will be presented in the Chapters (6) and (7). To justify this displacement, we might point to the difficulty of operationally defining the concept of *discourse-world model* itself, especially in relation to specialized discourse (4.2.2.2). This aspect has to be constructed on the basis of experience and perhaps with support from external (e.g. information science) classification criteria.

Insofar as any *procedure*, technique or instrument of *language engineering* can be integrated in this task, it is probably Rigg's suggested instrument – the thesaurus – as viewed from the *semasiological* perspective. Its application starts with the idea that a thesaurus – which may represent an ordered ontology or an indiscriminate aggregation of synonyms, hypernyms, hyponyms and loosely related terms to a lemma[18] – may be seen as an approximative model of a sector of a so-called *semantic field* or *lexical field. Lexical field* is a

> Term introduced by Trier (1931) to denote a set of semantically related words whose meanings delimit each other and are said to cover a whole conceptual or objective field without gaps (similar to a mosaic).
> Bussmann, 1996, lexical field

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[18]This is the observed behavior of Moby contributors (2011). While it may vary with regard other products, in can be seen as an information construction opportunity in this context.

While the strictly *paradigmatic* Trierian conception is the best-known *lexical field* theory in terminology research (Rey, 1995, p. 27), there are other semantic or lexical field theories that come closer to our idea:

> [F]ield theory in semantics is not a homogenous construct: more or less very different conceptions have been expounded by Saussure (rapports associatifs), Trier (Wortfeld), Porzig (syntaktisches Feld), Jolles (Bedeutungsfeld), Bally (champs associatifs), Guiraud (champs morpho-sémantiques), Duchácek (champs linguistiques), among a host of others. [...] Porzig's derives from *lexical solidarities or essential meaning relations* (on a *syntagmatic axis*)[.]
> Antia, 2000, p. 105

Porzig's idea at least fits with one theory-agnostic observation on lexical fields that would make thesauri approximate models:

> [...] a lexical field is understood as a subsystem of the overall structure of the lexicon composed of lexical items linked by paradigmatic semantic relations: synonymy, antonymy, complementarity, converseness, meronomy, as well as syntagmatic relations[.]
> Burkhanov, 1998, lexical field

In connection with the idea of *semantic system* as a *model* of *intersubjective* lexical "codes" – or what von Glasersfeld called "conventional meanings" (4) – thesauri can be seen to gain a use in "thick" meaning description that can be described as anthropological rather than linguistic in its outlook. This sample should show the implications of this:

> [T]hat which constitutes language is also that which constitutes what we more broadly call culture [... *S]emantic fields don not stand in relation of opposition to each other [...] nor [...] are they securely bounded at all.* Rather, semantic fields are *constantly flowing into each other.* I may define a field of religion, but it soon becomes that of ethnic identity and then of politics and self-hood, and so on. In the *very act of specifying semantic fields, people engage in an act of closure whereby they become conscious of what they have excluded and of what they must therefore include.*
> Ingold, 1996, p. 127

This interpretation of *semantic* or *lexical field* fits the analysis of *thick concepts* by *thick description* (1.1.1.2), which after all has been derived from ethnographic methods in anthropology. Terminologically, it also fits the idea of the term the *"stop of a thought"* (Alexeeva, (5.3)) which entails the very notion of distinction and closure that Ingold describes. How exactly this is to be implemented in terms of *language engineering procedures* remains however to be investigated. As noted, this aspects appears be invested too deeply in a closer investigation of the *thick concept* of *disciplinarity* in the following chapters. The application of *language engineering procedures* to the implementation of the *text-world model scheme* seems, by contrast, to be a more user-friendly and straight-forward affair.

5.4.2.6 Application of text-world model

On this end, the action of *codification* or modeling of cognitive entities (4.2.2) draws on the *scheme* of *text-world model*, if we take the term *text-world model* to describe "the total configuration of knowledge activated for processing a text". Regarding the *text-world model* as *scheme* requires two more considerations. On the one hand, the text suggests components which are concepts

and propositional relations – either in a strict or loose sense (4.2.2.1). On the other hand, we need to consider the processes of (re-)organizing, testing and comparing these concepts, which suggests the idea of a *scheme* (4) that brings about the "configuration".

With this, we combine the empirical finding that in *philosophical terminography*, "microtexts" or conceptual descriptions are "concept-oriented", even though they come embedded in *semasiological* microstructures – i.e. a stretch of text rather than a list of senses – which is a convention that we take over from the precursor practice of philosophical lexicography (5.2).

If we further assume that terminological units tend to be *homonyms*, *retronyms* and other formations *imported* or *borrowed* ((3.3.1.1), (3.3.1.2)) from either general language or other fields – and probably common to a set of other fields in the latter case, as the experience of sociological terminography (5.3) suggests – then the following application of *language engineering* and/ or *knowledge engineering products* may be suggested as a *procedure*: philosophical terminographic entries may be constructed after the model of a unit present in a semantic network (5.4.1) or a thesaurus with (an additional) *onomasiological* structure (5.3). As an example, we could point to the representation of *scheme* (in general language) as shown in Figure 5.4 (on page 138).

Obviously, the adoption of such a model can only be the starting point of an investigation and may provide an initial orientation. In the process of interpretation against discursive evidence or corpus data – which include works of reference – *perturbations* are encountered and the model is subtracted from (*assimilation*) or added to (*accommodation*) as instances of the term are inserted into various "contexts", or, more appropriately, co-texts. For this, other *language engineering* products may be used, such as *mind mapping* and *concept mapping* software (Nückles et al., 2004). These products may be considered as general-purpose instruments capable of producing "traditional" (5.1) *concept representations* (Wright, 1997b); however, the concept representation takes place on the *syntagmatic* end. *Paradigmatically*, the resulting organization of *rei* and *notae* must then in some way be proven to be *viable* against the *discourse-world model* and the *thick concept* of *scientificity,* a process which results in discourse production or *epistemic writing*.

The resulting microtext or terminographic record – which is designed according to the *text-world model* thus applied – may then be composed under consideration for additional materials, whose processing may require the use of further *language engineering products*. An example for these can be seen in bibliographic databases for formal documentation (Niedermair, 2010, 168 ff.). This is also an aspect of *meta-codification*, which is discussed as a subfield of terminology research in the context of "terminology and documentation" by Budin and Galinski (1998). The composition of the record itself can be more or less rigidly *meta-codified*, which raises an interesting problem in its own right.

Ideally, it should be possible to chain such entries *onomasiologically* in order to produce *coherent* theoretical accounts of concepts and expressions. These would be "text dictionaries", which could however be *engineered* to resemble any academic text type and genre and therefore to satisfy the requirement of *regenerative theory construction*. If this goal is achieved, any boundary separating the activity of *philosophical terminography* from discourse production (5.2) is efficiently dissolved: *philosophical terminography* becomes a *praxeology* of *discourse synthesis*.

Returning to the problem of *language engineering,* there remains the question of which actions can successfully be performed automatically, given that both human actors and artifacts are involved in the process. Much of the confusion surrounding the definition of *language engineering* (and to some smaller and different extent, that of *knowledge engineering*) can be attributed to

this problem. While we must refrain from treating it in the context of this work, some of the examples of technology application we provide may serve as initial data for further research.

5.5 Philosophical terminography as regenerative theory construction

We will now conclude the present investigation by tying the threads of the *theory – practice continuum* together and then evaluating the resulting argument. Given that a *praxeology* or "theory of action" spans the entire spectrum of *principle, approach* and *procedure* and seeks to tie philosophical investigation to the analysis – or in this case, synthesis – of particular cases, we have started by constructing an experimental philosophical term record after a definition of the respective taxonomic terms in the preceding Chapter (4). The record in question sought to document the constructivist interpretation of the Piagetian concept denoted by the term *scheme*. To make the process of *construction by interpretation* as transparent as possible, we have provided a dossier of encyclopedic information together with a selection of actual corpus examples.

Furthermore, we have introduced the cybernetic distinction of system and model in the wake of the experiment. This served to highlight the dual role of philosophical terms as both the *objects of description* (the *model*) and as theory components (in which case they become part of a *system*, i.e. the terminographer's *conceptual system*). This follows from the imputed inseparability of observer and observed: terminographers can be seen as both producers of information – whereby conventional epistemology would rather construe this as a process of "acquisition" or "reception" – and as users or codifiers of the self-same items of information. Depending on the nature of the concept thus built up, the systemic element might be applied to itself to produce its own description.

In the case of *scheme*, this might be best explained by stating that producing a concept like *scheme* helps distinguish experiential *schemes* from the background of larger wholes, like those expressed by the term *thick concept*. Although the *thick concept* has a *declarative* aspect which can be associated with a term, it also has a *procedural* aspect which can be seen to be "action-guiding" (1.1.1.2). It is this aspect that is distinguished by the adoption of the term *scheme*.

While some initial research on the more *declarative aspects* of *thick concept* was presented on the example of *scientificity* and more is to follow in the next chapters[19], the *procedural aspect* is deserving of explanation. Given that the cybernetic tradition suggests testing degrees of freedom within constraints[20], we began by explicitating the underlying premises that constrain our approach. Two points emerged:

1. The so-called *constructivist postulate*, which holds that knowledge is actively constructed; so is the information which in-forms this knowledge, as should follow from the extension of this postulate.

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[19]As we hope to have clarified in Chapter (4), the *declarative content* treated in Chapter (3) on the example of *scientificity* is of an *ideal-typical*, rational (i.e. *prototypical* and/ or logical) form and can be *deducted* from a representative exemplar or premise. By contrast, the partly *stereotypical content* (2) exemplified by *disciplinarity* must be *inducted* from *idiographic*, *contingent* examples by operations that are quite different and which in many ways *depend* on the *praxeology* of *philosophical terminography*.

[20]The constructivist expression of this is the concept of *viability*, see (3.3.3).

This principle is not an exclusive property of radical constructivism. It can also be found in the philosophy of information (*maker's knowledge*) and even Renaissance metaphysics (*verum factum*). Applied to terminology research, it signifies the dissolution of ontology into the philosophy of language and cognitive science. On this perspective, information (the "white box") results from the interaction between an observer (the first "black box") and the object of experience (the second "black box"). The observer has neither perfect knowledge of the inner workings of their mind nor of those of the object. In the specific case of *philosophical terminography*, the experiential object is of course a piece of codified discourse assumed to express some conjecture about the "inner workings" of its producer. This is largely a concretization of interactive *concept analysis* which we described earlier (1.4.4) as an *analysis by synthesis*. As this form of information is essentially *private* to any particular subject, the formulation needs to complemented by an explanation of how *intersubjective* interpretations are to be brought forth.

2. As the "full" or metaphysical concept associated with a term cannot be recovered from or be communicated in discourse, the production of a potentially codifiable "white box" model thereof needs to be achieved by a process of interpretation. This overlies and generalizes the phenomenon of semantic uncertainty or *indeterminacy*.

This process of interpretation is achieved by inserting the "conventional meaning", i.e. the formal or *intersubjective* (3.5) symbol or sign – with which that meaning is thought to be associated – into a "context" signified by an appropriate co-text. This represents a concretization of both *thick description* (1.1.1.2) and *hermeneutics* (1.4.3). Questions of meaning are to be regarded as open, philosophical questions, as either term suggest. Even modeling descriptions for any one author cannot yield absolute interpretations, since no codified explanation can *fit* every co-text across a broad range of works. Functionally, this statement of *principles* helps shape the *approach* by providing orientation to tasks that can be deemed tractable within the specifications of the principle.

Following the conventional distinction of *syntagmatic* and *paradigmatic* planes, one could say that the construction of descriptive "white boxes" by interaction enables *worldview construction* on the *paradigmatic* end of the continuum. This more or less trivially equals the observation that a modification of an observer's conceptual system takes place in the course of experiential learning. A taxonomic ordering of *worldview* components can be achieved under the adoption of *philosophical terminology*; in other words, it assists in the modeling of another's *hypothetical worldview* while providing elements too general or ethereal to be considered *schemes.*

In terms of the production of linguistic or semiotic artifacts that amount to semiotic models of *worldview* components (i.e. concepts), one must assume that while it is not itself fully expressible, said *worldview* may act as controller of the *schemes* that are used in discourse production. This view may supported by the observation – which is common to both radical constructivism and discourse linguistics – that people seem to be in possession of *tacit knowledge* that only emerges when it is challenged by some *perturbation*. Discourse production for the purpose of the formulation of conceptual knowledge can be described as *codification* in the widest sense. As such, it may again be modeled taxonomically by adopting a suitable process model, e.g. the process model of scholastic discourse production. This has the added advantage that it fits our model of interpretation. "Conventional meanings" become *rei*, "contexts" become *notae*, and both precipitate out the interaction of observer and observed. On the level of discourse production as

approach, we might locate the following entities that fit the description of *scheme* as a tripartite process which features phases of recognition, action-identification or recall and action:

- the *text-world model*, which works as a *scheme* for both text interpretation (or information production) and discourse production. So considered, inferential problem solving involves the *recognition* of a *paradigmatic* concept associated with a term, the comparison of the recognized pair against such *viable* concepts as have helped understand – or devise the structure of – the foregoing text, and the taking of interpretative action if this concept fails to support a successful inference. This latter modality could, as noted, also be considered a *perturbation* in the constructivist sense. For the case of terminology research, *higher-order schemes* (i.e. *meta-schemes*) like *scientificity* could be activated when resolving *perturbations*, e.g. with regard to terminological choice or argument structure. This however presupposes that these *meta-schemes* have already been built up by the subject.

- The *discourse-world model*, which expands this process to a range of separate instances of text which could be regarded as a sector of *discourse multiverse*. This *scheme* would be necessary for the interpretation of corpus data and should be seen as connected to a *meta-scheme* for *disciplinarity*. Rather than being used for making one-off inferences, such *schemes* can be imagined to call on the facility that is commonly termed *theory of mind* and to manipulate *stereotypes* and other simplification *heuristics* as they help the interpreter face greater experiential complexity. Their function can be seen to lie not so much in establishing an ad-hoc semantic *equilibrium* but in explaining the larger significance of what one reads (information production) and in predicting other's understanding of what one writes (discourse production). *Discourse-world model* schemes can be considered as particularly relevant with regard to specialist discourses, where one needs to consider the social "ignorance agreements" that arise with the division of labor, or specialization.

Understanding either model as a conjectural representation of *scheme* entails asserting that the relation between *scheme* and the information constructed is not a one-way affair: constructed information can either change a *scheme* (*accommodation*), or aspects of information can be disregarded or reconfigured to *fit* the *scheme* (*accommodation*). An experience that activates a *scheme* can be termed a *perturbation*. *Equilibrium* results when the *scheme* has been successfully applied and/ or modified; this is however a transient state that persists only until the next *perturbation* arrives.

Using all taxonomies hitherto employed for formulative purposes, it becomes possible to inscribe a process model into a *syntagmatic* schema – which is not itself a *scheme*, but the model of one – when cybernetic laws are activated for the structuring of the schema. This structure itself is as metaphorical as the schema is conjectural: its application results from the realization that some constructions (*principles*) are too general to suggest specific goals (*approaches*) or actions (*procedures*). According to the *law of requisite variety*, *principles* must therefore be situated higher up in the hierarchy of the schema as for them greater internal variety – which is necessary to reduce greater external variety – must be assumed. According to the *law of requisite hierarchy*, more specialized entities (*schemes*) need to reside further down as they have been brought forth as "filter" level to pre-reduce variety. In this sense, our interpretation of the two formal laws is not entirely conclusive as the reduction of complexity they suggest could be interpreted as progressing either bottom-up in terms of "variety" *or* top-down in terms of "hierarchy". For our

modeling purpose, this is not so relevant.

The central question of *praxeology* construction is rather to what extent the schematic model of the higher levels suggests the adoption or modification of *procedures* used for purposes other than *philosophical terminography*. As the organization of this chapter along the linear sequence of generic to specific did not allow for an immediate juxtaposition, this shall now be provided by presenting an adjusted version of Figure 4.4. As can be seen, the adjustment consists in the *superimposition* of Figures 4.1 and 4.4:
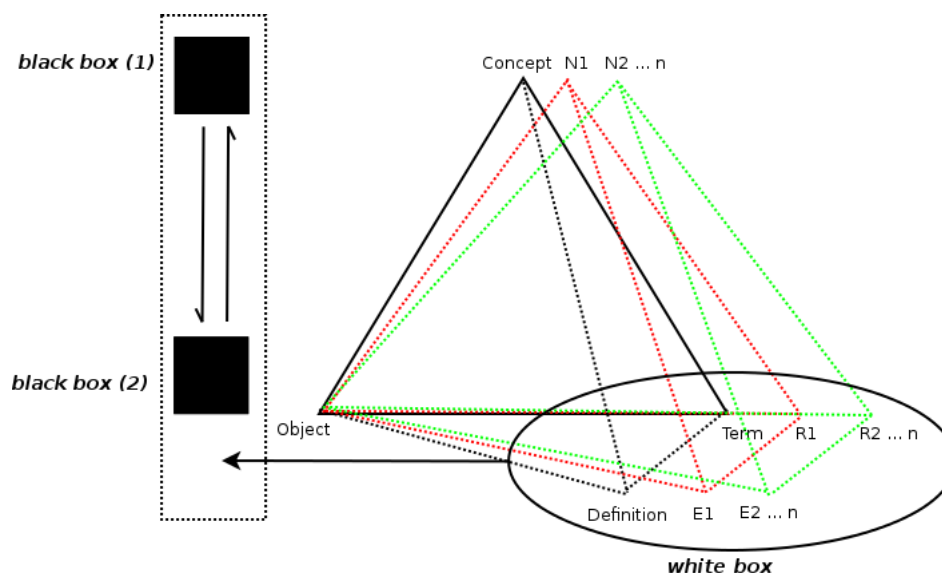
Figure 5.5: Continuity of *principle*, *approach* and *procedure* in *philosophical terminography*.

To the left, we can see the interaction of observer and observed that is assumed to follow from the relevant *principles*. Specifics of what the interaction consists of are however not given in this place and can be substituted as necessary. If the process of interest is, for example, a scientific research process, one may inscribe this area of the diagram with the parameters given in (3.5) and replace the double arrow with, e.g., Oeser's model of the scientific cycle (Figure 3.1). The internal workings of either subject and object are assumed to be "black", i.e. intransparent; yet the information that the subject constructs is "white", i.e. transparent for – if only for – the subject and the specific interaction. Given the twin *approaches* of *worldview construction* and discourse production, we might assert two frames for modeling this information:

- For *paradigmatic* information, we may consider Figure 4.3 as a functionally conjectural working model of the modifications of the observer's *worldview* or conceptual system as they emerge from the interaction with terminological objects. The most fitting point to connect this to the adjusted model of the extended semiotic triangle here shown was at the space reserved for "object". Here, the *worldview* or conceptual system is considered an immaterial gestalt-like object. On the upper left, we see the second black box, symbolizing the observed subject's (or object's) conceptual system. This has been aligned with the point of "concept". This object is "black" since, as noted, it must be located in "ontic" reality and may only speculated be about by way of the *sociological imagination* or *theory of mind*. This speculation is however a by-product of the interpretative process, as our considerations on the distinction between *worldview construction* in the strictest sense (i.e. philosophy) and *philosophical terminography* should have shown. This part of diagram

might described as aligned to vertical *paradigmatic* axis.

- *Syntagmatic* information is constructed in the process of interpretation and the *approach* of discourse production. This needs to be considered in terms of the continuity of theory and practice under the umbrella of *praxeology*. This part of the diagram may be seen as aligned with the horizontal *syntagmatic* axis. Here, the encircled area corresponds to the overlapping observations on terminology use in the human sciences that can be inferred from our observations on philosophical lexicography and sociological terminography. In the area between "term" and *retronyms* and "definition" and *explications* we might inscribe the representation of the "pulse of attention" displayed in Figure 1.2 on an abstract level. Concretely, we are dealing with the interpretation of codified text fragments and the construction of information from them, which contributes to the "white box" of interaction, as indicated by the left-pointing arrow.

While an overall assessment of the interconnection between the source activities of various procedures has already been given in (5.4.2.4), we have condensed them into a schematic overview which can be seen in Figure 5.6 (on page 139).

Regarding what the figure shows, we can state the following. "Zooming out" from the particulars of the *procedures* described in this chapter, we can see the circular, *regenerative* properties of the *praxeology* of *philosophical terminography* we have designed. There are four relations in the figure which merit special attention:

1. Insights derived from the human *theory of mind* also recursively influence and modify *principles* and *approaches* in the *praxeology* of philosophical terminography.

2. Insights into the *theory of mind* as they emerge from the practice of *knowledge engineering* can serve as models for the interpretation or *simulation* tasks of philosophical lexicography and are revisited in the context of *philosophical terminography*.

3. *Philosophical terminography* develops and defines *document prototypes* or templates for *language engineering*. This is the aspect of *meta-codification*.

4. Document management processes and tools developed in the context of *language engineering* are themselves used for *meta-codification* as adapted from the context of generic terminography.

If we want to render the *praxeology* of *philosophical terminography* truly *regenerative*, we should derive a program of points to be further elaborated reflecting on the above. If we wish to explore the full potential of developing the *simulation theory of mind* as a *hermeneutic* tool, we will need to complement our schema in the area of its "ontological circuit" with one final missing component. This component is a model of the *thick concept* of *disciplinarity*. Its implementation is also the precondition for applying the below method to the description of individual terminological units, but this is mainly relevant in the context of the delimitation of subject fields on an individual and empirical basis. Consequently, it constitutes the subject of the following Chapter (6).

Besides clarifying the material conditions, i.e. identifying systems for processing records made to the specifications of the *praxeology* of *philosophical terminography*, the *praxeology* should naturally specify parameters for the description of specific philosophical terminological units as

well. It should suggest what kinds of units can be isolated for description besides the conventional ones. This is again a topic that to some extent draws on *theory of mind* capabilities and human "knowledge engineering". The construction of a relational matrix for this purpose will be the subject of the concluding remarks of the present thesis (Main conclusion, p. 246 ff.).

If documents or "meta-documents" (i.e. *templates* for data entry) are to be derived from the practical processes of *philosophical terminography* – which have here been derived from a number of precursors – then the question to ask would be whether computational templates and the applications that process and manipulate them can be adapted from generic terminography and other fields of information technology (e.g. content management) or whether they have to be created from scratch, in whole or in part. If existing products and techniques can be adapted, then the question of the extent or degree of necessary adaption would follow. These are generally questions that can only be answered experimentally and require a specific usage scenario. As a preliminary step, some impressions of the *procedural* side of the scenario will be formulated in Chapter (7). This question flows to some extent from the treatment of the process of *meta-codification* in general, but given that the *praxeology* of *philosophical terminography* is twofold and pertains to *worldview construction and* discourse production – the one being the prerequisite of the other, even though not exactly mirrored in it – one might ask about the deeper relationship between the two. This in turn would determine what a computational system for discourse production should have to look like in order to advance *worldview construction* as well. This latter question touches on the relationship of human and computational artifact components in what is to be considered as a whole system. While the paradigms of human-computer dichotomy versus human-computer interaction cannot be treated here, the preliminary idea of the relationship between *instrumental reason* and *"pure" phenomenology* will find some treatment in Chapter (7).
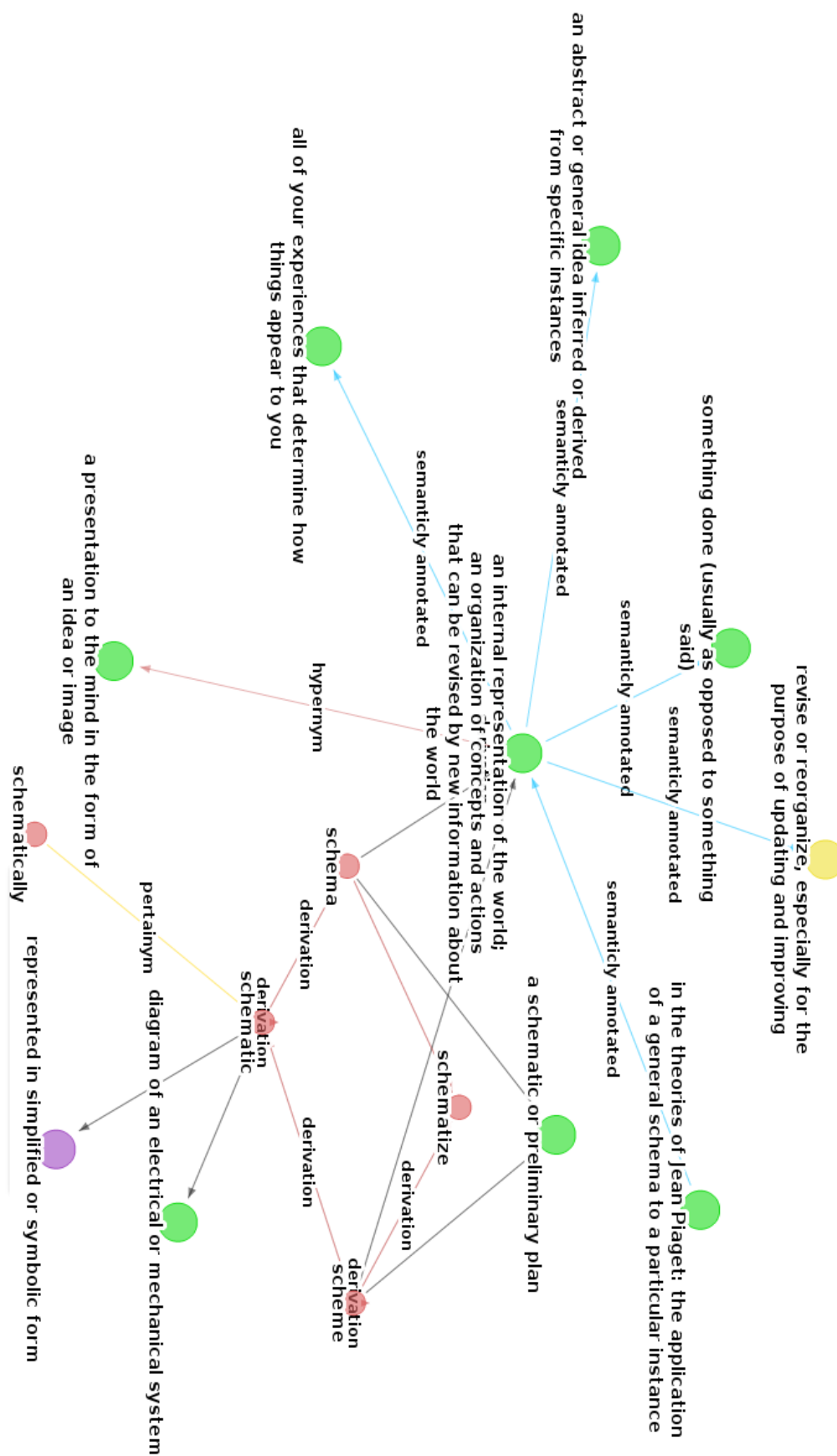
Figure 5.4: Visual representation of WordNet data for `scheme`. The representation has been produced by the product *WordNet editor online* (Szymański and Chodor, 2013).
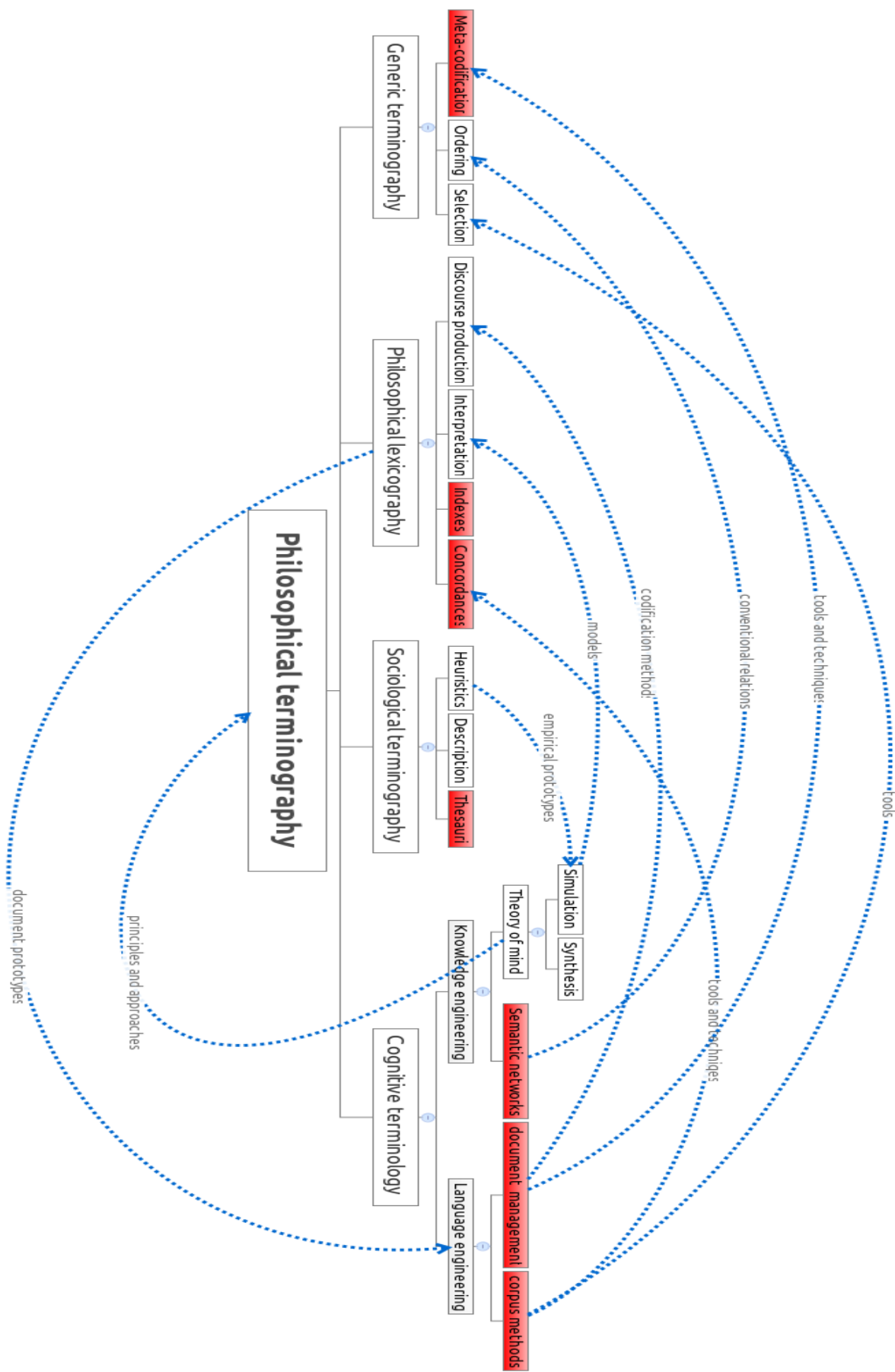
Figure 5.6: Philosophical terminography and neighboring practices.

6 Understanding declarative disciplinarity

Introduction

What might we understand by *disciplinarity*? So far, we have used the term numerous times throughout the thesis without providing a definition. This is because, as we have argued in the foregoing chapter, *disciplinarity* can be seen as a *thick concept* whose *procedural,* i.e. *meta-scheme* aspect seems to be responsible for the modeling of the background knowledge of other discourse participants ((4.2.1), (4.2.2.1)) and therefore for the assessment of the *acceptability* or *appropriateness* of terminology use in discourse production (3.5). We have connected the idea of *disciplinarity* to the conventional rules of language games (2.5.5.4) and the simplification of experiential complexity through, e.g. *stereotyping* (2.5.5.1).

As this aspect however follows from the distinction of *declarative* and *procedural disciplinarity,* it will be specifically treated in the following chapter (7). The present chapter is mainly concerned with this preliminary distinction itself; it starts from the idea of subject classification, which is generally recognized to be an important factor in delimiting the range of material used in terminology description ((3), working definition of *terminology*, § 2), although this is not always associated with social factors.

In terms of the idea that the *thick concept* is characterized by both *declarative* and *procedural* elements (1.1.1.2), we might say that "classical" subject delimitation relates to the *declarative* element, while social considerations relate to the *procedural* frame needed for modeling the *thick concept* of *disciplinarity* in a functional manner (5.4.1).

The latter entails engineering a mental "semantic network" by simulating communicative situations that might be encountered in a specific context. The former, on the other hand, entails identifying this context in the first place and thus starts in essence from the basic categories of experiential space and time, or Kant's "twin spectacles" (Le Barre, cited in Bertalanffy 1968b, p. 225).

In a context outside the social sciences or philosophy, a declarative approach may well suffice, but inside of it, the distinction of the two modes of orientation will be demonstrated to be well justified.

Even said declarative considerations will take on a specific quality, as the following discussion of special cases at the interface of scientific and philosophical disciplines will make clear; these observations should be understood to complement the model of the *thick concept* of *scientificity* (3) from an *inductive* point of view. Though constructed in a "bipolar" mode, the models of the *thick concepts* of *scientificity* and *disciplinarity* need to be derived by different operations. This can be justified as follows. The model of *scientificity* is, in its declarative and procedural aspects, largely *deducible* from *ideal types* and/ or *prototypes.* It seems to require, on balance, less interaction than the building up of *disciplinarity,* which seems to depend on more interaction-intensive and detailed case studies in order to be understood.

The reason for this is that even the *declarative* aspect of *disciplinarity* seems to be more *complex*, i.e. possessing a higher degree of internal variety (which on the cybernetic view of the procedural function would serve the purpose of counteracting a higher degree of external variety, (4.3)); its counterpart is the so-called *semantic system*, whose explication suggests *complexity* in and of itself:

> We introduce the concept of a semantic system as a type of social system that is based on the collective construction of sense and meaning in society. Niklas Luhmann has developed a theory of social systems (Luhmann 1984 et passim) with the concept of "Sinn" (sense and meaning) as the axiomatic concept of this theory. Another axiomatic concept is that of communication. Sense and meaning have to be communicated by those who create and change social systems. Due to the fundamental role of semantic processes in any social system, we can infer according to Luhmann that social systems are always semantic systems. In communication as a social system, social expectations regulate human action and the interaction among individuals. *Structure* and *event* are the *static and dynamic elements of such systems. The reduction of complexity is the driving force of the constant change of social systems.* [...] We can summarize by pointing out that the notion of a semantic system is based on a multidisciplinary convergence of theories and approaches from systems theory and cybernetics, sociology, linguistics, philosophy of science, and epistemology.
>
> Budin, 2007b, my emphasis

As this work follows the principles of constructivism, we hold that concepts like "sense and meaning" have to be gradually built up by each individual observer and by means of interaction and inductive modification of what we chose to consider their *worldview* or *conceptual system* (4.2.1). As it is not possible to experience *all* "structures" and "events" – whereby "experience" includes generating interpretations of other's descriptions or "communications", (4.1.1) – we restrict ourselves to modeling a possible process by which we think a *viable* idea of a semantic system can be "formed [...] by means of generalization from [... one's] own experiences" (Glasersfeld, (2)).

6.1 Ontological vs. experiential understanding of complexity

In this regard, an adjustment to our understanding of *complexity* needs to be made in order to differentiate our approach from alternative views on the topic, especially Gerhard Budin's systemic terminology or WIKO theory (1996), in the spirit of which the above was likely formulated.

Along these lines, we might distinguish *ontological complexity*, as it might pertain to *semantic systems*, and *experiential complexity*, which we ascribe to the *model* that is generated in the interaction of observer and observed, and which therefore represents the individual observer's model of the observed system, as flawed and incomplete as it may appear from the realist's perspective[1].

Since we need nevertheless to account for the perception or *experience of complexity*, we might as well put our instrumental concepts in order by distinguishing two phenomena that can evoke this experience. The first is socio-historical complexity or *contingency*, which is strictly relative to the temporal situation or situatedness of the observer and therefore analogous to "events". The second is organizational complexity or *stratification*, which relates to the necessary degree of whole/part complexity of the model and is therefore analogous to "structures". Both relate,

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[1]Its critics should therefore address arguments in this regard to the epistemology proper, and not to its application.

in any case, to the complexity that the model to be constructed must possess in order to fit the unknown degree of "external" complexity of cognitive artifacts or documents insofar as their discourse is characterized by reference to *contingencies* or appears *stratified*.

Therefore, neither of these distinctions relates to how complex the object in question *is* from an observer-independent perspective. Rather, they seek to describe how complex the cognitive organization to be imposed on it needs to be in order to viably explain and predict, or construct a *heuristic fiction* that serves the purpose of a "human" ontology (4.3) as a necessary precondition for subject delimitation along the lines of the apparent *declarative disciplinarity* displayed especially by human sciences or philosophical subjects. Within this frame of reference, it strictly follows the system/ model distinction.

6.1.1 Ontological complexity

As already noted in our discussion of the general principles adopted for *philosophical terminography* (4.1), Budin (1996, p. 22) rejects both radical constructivism and naive realism as possible epistemologies for the modeling of his WIKO approach (abbreviation for (Ger.) *Theorie der Wissens-, Informations- und Kommunikations-Organisation*, or "theory of the organization of knowledge, information and communication", ibid., p. 2). In the case of radical constructivism, the argument for this decision is that it "claims to solve the problem of reality in an oversimplified fashion" (ibid, p. 22). That this is considered a problem may be explained from the author's perspective.

It is fair to state that Budin's entire work is dedicated to the elaboration of (ontological) *complexity*, which besides the concepts of *organization*, *system*, *specialized knowledge*, *specialized communication* and *terminology* (there defined as "the structured entirety of concepts and their associated representations in a specialized subject", p. 16) constitutes one of its central axioms (ibid, ch. 2). His definition of complexity is adopted from Niederson and Pohlmann (cited ibid, p. 36, my translation[2] and emphasis) and runs as follows:

> A system *is complex or possess quality of complexity* if it satisfies two requirements simultaneously: First, it needs to possesses a heterogeneous multitude of related components (Ger. *Zusammenhänge*) which are, in general, hierarchical and mutually coordinating, or the *aspect of being*. Secondly, the *aspect of becoming*, which is characterized by the *existence* of potentialities (Ger. *Potentialsituationen*) which entail that any particular component can sometimes trigger spontaneous innovation.

This definition highlights a metaphysical view of the complex, which is characterized in terms of being and becoming, rather than in terms of perception and interpretation. *Complexity* is

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[2]The translation of this fragment proved difficult insofar the original is barely comprehensible; its wording reads: "*Ein System ist komplex bzw. es besitzt die Eigenschaft Komplexität, wenn es eine heterogene Vielzahl der untereinander im allgemeinen [sic!] hierarchisch koordinierenden Zusammenhänge aufweist (Komponente des Seins) und zugleich solche Potentialsituationen existieren, daß bei Auslösungen durch das konkrete Einzelne mitunter spontan Innovationen auftreten (Komponente des Werdens)*". This effect seems to be due to the fact that German is apparently capable of generating and syntactically chaining compound terms which do not contain any indications of particular agents or objects; *Zusammenhang* can be taken to indicate relation, but a relation of what to what else, exactly? *Das konkrete Einzelne* is the literally "the particular anything". While the necessity to describe at an extreme level of abstraction goes with the subject matter (Footnote 4, Chapter (4)) it has been demonstrated that such description can employ syntactic (shorter sentences, prepositions) and lexical resources (concrete nouns: goal, model, action, disturbance, control) to be formulated so as to be relatively unproblematic in terms of interpretation. In our translation, we have applied the former means, but have also calqued the expressions to prove the point. Further implications will be given in the concluding section of the present chapter.

implicitly ascribed to the thing-in-itself.

In line with the hypothetical realism of evolutionary epistemology, which Budin adopts (p. 2; 28), this concept of *complexity* is then adjusted to describe "*hypotheses about* the nature of objects under observation", (ibid, p. 8, my translation and emphasis).

Both the definition, the interpretation and the general approach of this form of terminology research as an "applied philosophy of science" which takes an interest in "onta" (p. 28) suggest that the perspective taken is quite different from our outlook, and emphasizes the *ontological complexity* of the system seen from the *outside* rather than our introspective, heuristic view which stresses the aspect of formulating subjective impressions of the *experience* of complex systems.

This distinction may be formulated as follows, in terms of Budin's own distinction of systemic layers: the WIKO perspective would be nearer the macroscopic perspective, which corresponds to "the holistic aspect of a system, seen in terms of its functioning as a whole" (ibid, 34). *Philosophical terminography*, which functionally emphasizes personal *worldview construction* and discourse production for the purpose of *regenerative theory construction* would be on the far microscopic end of the continuum, the sphere where "practice" is described in terms of "concrete events in the system" (ibid., p. 34/35) only insofar as these events can be experienced or imagined by extrapolation of already constructed *worldview* elements.

6.1.2 Experiential complexity

Thus, insofar as we ascribe *complexity* to *disciplinarity* as an epistemic instrument of *philosophical terminography*, this complexity is equivalent to *experiential complexity*. Like *stereotype*, it can be seen in terms of two dimensions, the social (2.5.2) and the cognitive (2.5.3). Both coincide, from the synthetic point of view, in the sociocognitive approach to terminology (1.4). The social dimension can be seen as nearly self-evident and relates to the *quantity* of experiential "inputs" the individual's *worldview* has to control for; by analogy, this can also be seen to hold for the *discourse-world model*, which is a *sub-scheme* of *disciplinarity* ultimately in-formed by *reflective abstractions* from this (4.2.2.2):

> Complexity is perhaps the most essential characteristic of our present society. As technological and economic advances make production, transport and communication ever more efficient, *we interact with ever more people, organizations, systems and objects.*
> Heylighen, Cilliers, and Gershenson, 2007, my emphasis

With regard to the function of *disciplinarity* as a categorization device, this would relate to increased indeterminacy in interpretation related to difficulties of placing a terminological unit in one or more contexts out of a choice of many similar ones. As stated in (3), working definition of terminology, this is one of the perennial problems of terminology description.

With regard to "people, organizations and systems" whose communications constitute a "semantic system", this context would be socio-historical or *cultural*, in the sense of culture as the "totality" of "modes of behavior, institutions, ideologies, and myths" (Certeau, (1.1.1.1)). They form the context in which social relations are experienced, and which can bring forth "objects" (cognitive artifacts, e.g. texts). It is a truism that objects stemming from different contexts (times, places and cultures) differ in terms of which descriptions of social relations they feature.

In this regard, these two aspects are continuous; *philosophical terminography* is only interested in the analysis and synthesis of cognitive artifacts by discourse production and needs to be aware

of socio-historical complexity only insofar as its traces recur in the interaction with some of the objects in the form of *stratification*, or complexity of the model that must *fit* – but in no way *match* – the unknown extent of object complexity (4.1.1).

6.1.2.1 Contingency or socio-historical complexity

Therefore, we regard most socio-historical factors as *contingent* for the case of terminology description.

Contingencies are encountered in the reading and comparison (interpretation/ construction) of texts in the *textual archives*[3] of a discipline or field – the preparation of samples and excerpts which would then be combined, contextualized and condensed in the form of records. Thus, they accompany the activity of constructing experiential meaning from which the terminographer's worldview emerges.

As *contingencies* are resolved by application of *schemes* like *text-world model* (4.2.2.1) and *discourse-world model* (4.2.2.2), these records can ultimately be "terminated" (compare Alexeeva, (5.3)) with a designating expression or term. It is this expression which also serves as a "handle" to activate the respective concept or category in discourse production. Given the context, it stands to reason that this would be a *retronym* (5.3) whose conventional usage can *assimilate* or be *accommodated* to the given range of text fragments and the terms and *explications* they contain. Seen *a priori*, both the choice of *retronym term* and the exact range of fragments to be categorized are indeterminate as the context into which they can be inserted needs to be inductively established. This is the function of the *meta-schemes* of *scientificity* and *disciplinarity*.

Indeterminacy or semantic uncertainty as we understand it (4.1.2) can be understood as a "normal" feature of this process. The activity of subject delimitation thus becomes a subfunction of the overall process and is practiced *a posteri*, by gradually adding information *about* the context in which a term or fragment has been discovered to the record. This entire thesis – in whole or in part – may serve to exemplify this practice, whereby the construction of the concept of *stereotype* (2.5) can be seen as prototypically demonstrating the form of the records that we refer to.

This aspect of the practice of *philosophical terminography* is intuitive, and its ad-hoc informality is owed to what will be described as the *contingency* of subject fields, which we simply accept as a fact of experience.

It can be sharply contrasted with the perspective of subject delimitation and corpus building as *a priori* activities, which was provisionally assumed in (1.4.1) and may be the result of the more pedagogical concerns of *termontography* that make it necessary that pre-defined subject structures are taken as the point of departure (Temmerman and Kerremans, 2003).

The form of indeterminacy that is described by e.g. (Kristiansen, 2007), below, is perhaps best subsumed under the heading of *contingency* in the present context. However, what should we understand by the category of *contingency*?

The idea of *contingency* should be understood in the context of the need to conjecture (i.e. predict, explain) about the workings of *semantic systems* by means of the *sociological imagination*

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[3]This is not an physical corpus but a *paradigmatic* abstraction of discourse in general; *textual archives* are "archives of [... the discourse community's] common interest [...] The textual archive [...] is a *virtual concept* as it is not only impossible nowadays to collect everything which has been recorded on [... a] subject", Ahmad/ Rogers, cited in Temmerman, 2000, p. 53.

or *theory of mind* ((2); (5.4.1.1)), whereby the expectation is that the conjecture should yield a *viable* explanation that is ideally consistent with observer's idea of *scientificity* (3). This is however more of a feature of discourse production than one of *worldview construction.*

In this context, the resolution of *perturbations* resulting from competing alternative explanations involves the imposition of simplifying *heuristics* – or a "reduction of complexity", as achieved by *someone in particular* rather than a *semantic system* as a collective abstraction – on experiences which involve a large number of unknown variables. This is what makes an interpretation task *experientially complex* in the cultural or socio-historical sense entailed by the term *contingency.*

As an idea, it has seen some reception in terminology research and translation studies, due again to the influence of Luhmann (Hermans, 1999, p. 81, Budin, 1996b, pp. 25/26, and the above). There it is seen to denote "ontic coincidence" (Budin). *Contingency* is a *retronym* likely adopted from philosophy, where it is defined more strictly (compare *proposition* as used in (3.4) vs. (4.2.2.1)):

> In logic and metaphysics, contingency designates a modality which is often erroneously described as 'coincidental'. A condition is contingent if and only if it is *neither necessary nor impossible.*
> Schmidt and Gessmann, 2009, Kontingenz, my translation and emphasis

With regard to the above argument, we now need to reiterate the following: constructivism posits that the mind works by abstracting regularity from experiences (*reflective abstraction*, (4.1.1)) and consequently projecting them onto expectations of future events under the premise that once *viable* decisions will remain *viable* (5.4.1.1).

If we consider experiences (or systemic "events") as *contingent*, then it follows that all regularity attributed to them is the result of this abstraction (the action of *schemes*) and not of the experiences *per se*. This difference can be taken to be literally isomorphic to the difference between system and model.

By way of a practical example, any given *retronym term* (e.g. *contingency, proposition*) might be characterized as "typical" for a subject field (author, period, etc.) when it was (from a *diachronic* perspective) "in fact" an *import* or *inter-domain borrowing* from another. This may however only emerge when the earlier assumption is questioned and further inquiry is done, which contradicts the idea of relatively stable "ignorance arrangements" that allow everybody to "mind their own business", as the agnotologists contend (4.2.2.2). As the case may be, any such insight requires a revision of the *scheme* of *discourse-world model*, which then undergoes an *assimilation* and/or *accommodation* (Main conclusion, 246 ff.).

This observation overlaps the phenomenon that Rita Temmerman described as *"self-centredness"* and which we described as *subject-specific stereotype* (2.5.5.2). The *stereotype* is however assumed to be fixed, while the *scheme* – ideally – remains variable.

If we repurpose the "psychodynamic" view on *stereotype* and generalize it to encompass the interpretation of *contingent* experiences, we can see that the implied interpretations or *reflective abstractions* are, like the stereotypes, "functional, but flawed" – in short, that they might be error-prone[4] as the theory of *cognitive biases* suggests (Frey and Frey, 2009; Heylighen, 2010). We might even regard the *stereotypes themselves* as a form of *cognitive bias*, if we extrapolate from

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[4]from a realist perspective; otherwise, we could assume that one can abstract *inviable* regularities as well as viable ones.

decision-making to categorization by understanding *categorization* as a *decision* about whether different mental phenomena are to be grouped or separated.

Cognitive biases are, at the simplest, the (statistical) errors produced by the application of *heuristics* to solve problems in complex environments or systems (Fischhoff, 1999, p. 423, Heylighen, 2010, p. 107). *Heuristics*, by contrast, are "simple, efficient shortcuts applied in judgment and decision-making when people face overly complex tasks, have limited time or cognitive ability, or deal with incomplete information in the world" (Haselton et al., 2009, p. 737) or "rule[s] of thumb that people use to simplify problem solving when the search space is too large to be systematically explored" (Heylighen, 2010, p. 107).

The idea of *"heuristics and biases"* is attributed to the cognitive psychologists Amos Tversky and Daniel Kahneman; it essentially holds that human decision-making tends to deviate from the "normative standards of logic" (Haselton et al., 2009, p. 737) and thus ideal-typical rationality.

This does not contradict the idea of the adaptive function of knowledge (Glasersfeld, 2004, p. 219) as the *bias* ("flaw" in the realist's sense) can *itself* be adaptive[5]. But it does say that coping with *experiential complexity* by imposing regularity on *contingent* events does not amount to an approximative understanding of *ontic complexity*, and this is what differentiates our understanding from the ontological perspective on complexity.

On this view, it is sensible that constructivism does not want to make any claims about an experiencer-independent reality. *Contingency* therefore describes the socio-historical aspect of *experiential complexity*, which is inherited or translated into *stratification* or cognitive/ organizational complexity to the extent that *semantic systems* (or rather, the actors that comprise them!) bring forth cognitive artifacts containing formulations that either refer to *contingencies* or must be understood in *relation to implicit contingencies*. In this case, we can assume that those who formulated the discourse have had experience of the event in question, which must however remain opaque to the last person constructing information by way of interaction with the artifact.

This aspect of *experiential complexity* is by far one of the more pressing practical concern to our conception of *philosophical terminography*, and a tentative idea of its inductive treatment will conclude the experimental part of present work (Main conclusion, on page 246 ff.). Here, the concept will only be briefly characterized insofar as this is indispensable for the present discussion.

6.1.2.2 Stratification or organizational complexity

A second, more cognitive aspect of *experiential complexity* is best described in terms of *stratification*.

At its simplest, the conventional meaning of this term can be defined as the belief in a "hierarchy of levels of reality". François (1999, p. 204) attributes the first formulation of this principle to the philosopher N. Hartmann. An evaluation of this claim should prove difficult as the belief (and certainly the term) seems to be near ubiquitous and recurs in terminology research (Budin, 1996b,

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[5]See for example this observation regarding memory, which can be seen as a "routine" or sub-aspect of *scheme*: "Reliable recollection often depends on "source memory," the recall of how you encountered an object or event. Witnesses have erroneously identified alleged criminals because they had seen them outside the context of the crime [...] A sense of familiarity was retained, but the source of this familiarity was forgotten (Thomson 1988). People often fail to keep track of the origins of their experience or beliefs. [...] The adaptiveness criterion suggests [..] forgetting sources is an economical response to the enormous demands on memory (Harman 1986)", Goldman, 1999, p. 281.

p. 97), translation studies (Wilss, 1996, pp. 58; 80; 104), linguistics (Halliday, 2004, pp. 53/54) and the sociology of science (Sismondo, 2010, p. 37). Depending on the respective context, it is attributed to phenomena as diverse as the aforementioned semantic systems, knowledge, meaning, grammar, metaphor, power and funding. *Stratification* has also been represented both linguistically and graphically. It might best be regarded as a *heuristic* in the above sense. A representative example can be recognized, for example, in this figure:
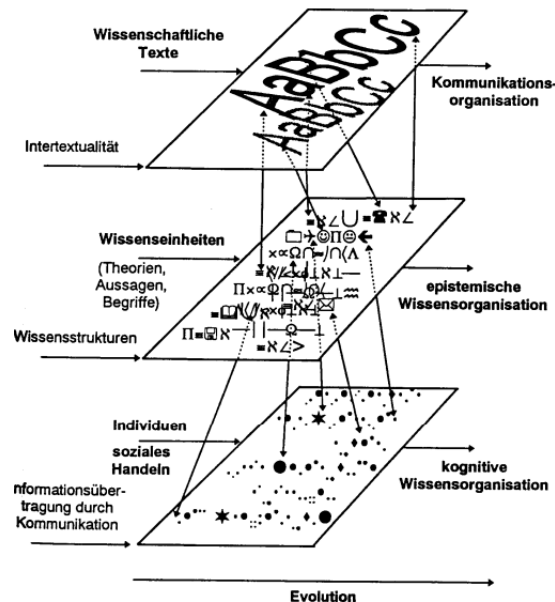
Figure 6.1: Stratification. Caption reads: Dynamic complexity; model of the discursive organization of communication, explained on the example of citation, under the aspect of epistemic innovation (Budin, 1996b, 97, my translation).

Generally, the hierarchies suggested by the idea of *stratification* seem ordered and clear-cut, an observation which might be interpreted in terms of their *model function* insofar as they result from the same individual's organizing/ constructing activity. This may however be a function of the respective perspective.

By way of a counter-example, Latour's explication highlights that these strata or layers may well represent elements that have sprung from the interpretations and cognitive activities of others. It makes clear that in the case of scientific and academic discourse production, the texts must in fact contain such elements:

> The difference between a regular text in prose and a technical document is the stratification of the latter. The *text is arranged in layers*. Each claim is interrupted by *references outside the texts* or inside the texts to other parts, to figures, to columns, tables, legends, graphs. Each of these in turn may send you back to other parts of the same texts or to more outside references.
> Latour, 1987, 48, my emphasis

These elements, which must be constructed again by each interpreter as *maker's knowledge* (4.1.1) can take all kinds of *syntagmatic* forms, including those of terms, *retronyms, explications, fragments, named entities*, and so on. Insofar as they contain references to thought objects, their

construction can be seen to be under the influence of the last interpreter's worldview and the operations of its *schemes* (and *biases*), and **if**[6] we assume – for the sake of the argument – that the discourse of the document refers to the self-same object, the layers of the hierarchy can be taken to become gradually skewed, dented, or sideways twisted into knots, while layers are constantly being removed or added.

Budin's synopsis of this is that "citing the content of a text *changes the knowledge structure of the text*, which contains references to further texts" (Budin, 1996b, 96, my translation and emphasis). This can be seen as an acknowledgement that this process does happen, but not necessarily as a hypothesis of how it comes to be so. In order to visualize the implications of this, we could extend[7] the *geological metaphor* one might associate with the term *stratification* to aid our understanding. The phenomenon *stratification* is known in geology as:

> the layering that occurs in most sedimentary rocks and in those igneous rocks formed at the Earth's surface, as from lava flows and volcanic fragmental deposits. The layers range from several millimetres to many metres in thickness and vary greatly in shape. [...] Where layers have been *deformed*, the record of *past movements of the Earth's surface* is preserved in the stratification, making possible the interpretation of geologic events and permitting such practical results as the location of mineral deposits, petroleum fields, and groundwater reservoirs.
> Britannica Contributors, 2013, my emphasis

The layers of a document – and by extension those of the context of its production, as indicated by its position in a textual archive – can be seen as elements "deposited" by discourse producers exercising *meta-schemes* of *scientificity* and *(declarative) disciplinarity*. They are however "deformed" by "tectonic forces", i.e. the *procedural* or *action-guiding* aspects of the respective *thick concepts* ((3); (7)) and the process of interpretation (4.1.2) resulting in "natural" strata that might be imagined as similar to something like this:

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[6]This is a big "if", indeed. A fully formulated model of *disciplinarity* might at least help *guess the probability* that an interpretation *fits* one context or another, and therefore provide a *heuristic* tentatively adjusted for a particular *bias*. See case examples.

[7]"The very systematicity that allows us to comprehend one aspect of a concept in terms of another [...] will necessarily hide other aspects of the concept. In allowing us to focus on one aspect of a concept [...] a metaphorical concept can keep us from focusing on other aspects of the concept that are inconsistent with that metaphor", Lakoff and Johnson, 2003, p. 10. Operationalized for our form of *concept analysis,* this implies that subverting the metaphor by looking at its "hidden" implications becomes a method of *paradigmatic analysis* (1.2.3.1).
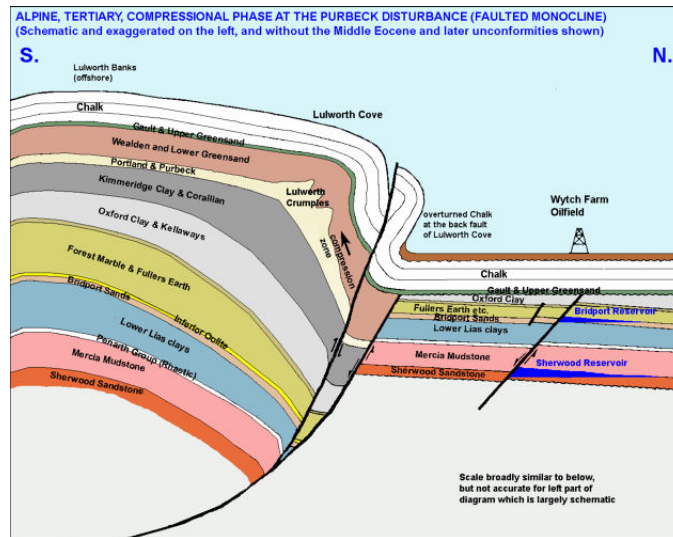
Figure 6.2: The analogy of geological stratification: image shown is of strata in the formation Stair Hole, in the southwest of England. Source: West, 2012.

Unless order is imposed in one more process of interpretation ("understanding"), *stratified* documents can appear as anything but tidy, and the interpretation can only be seen as relative to both the constraints of the object and the interpreter's *worldview*. Constructing a plausible – that is, *coherent* and *viable* – account of how *heuristics* for such processes of interpretation can be built up is the main challenge of *philosophical terminography*, as previously argued.

As we have surmised, it takes the form of generating a "white box" on the *worldview* level by creating a codified piece of discourse detailing the perceived or ascribed organization (i.e. the regularity) of parts of other cognitive artifacts (*terms, explications, fragments*) in a given context that is to be identified by executing these procedures. This is where the idea of declarative subject delimitation becomes central.

What is of interest here is how the organization can be understood or described in terms of an explanation that is not only hierarchical but also functional; here, we encounter *complexity* in the sense of *stratification* as a practical problem of subject delimitation:

> The noun complexity can be described as the quality of being *intricate* and *com-pounded*. Its values are complicated in structure, consisting of *interconnected parts*. When applied to scholarly areas [... it] may be seen as caused by factors that can be ascribed to the scholarly area itself [...] The existence of competing schools within a scholarly area may [...] lead to a higher degree of complexity [...] Another factor may be that many scholarly areas have been developed from already existing scholarly areas.
> Kristiansen, 2007, 66, my emphasis

This problem statement needs to be operationalized. The questions to be asked in the process of the resolution of *stratification-related experiential complexity* are: *Why? What? When? Where?* and, in the human sciences, most often, *Who?* They should have an impact of the interpretation of *retronyms*, given that subject areas, when they develop from others, take over the terms denoting their object, and that the greater the numbers of competing schools, the greater the number of competing *explications* for these *retronyms* in general ((5.2), (5.3)) will be. In short, we can assume that the greater the *stratification* of the context is, the more pronounced the

stratification of any cognitive artifact produced in the context[8] will appear.

Subject delimitation as supported by a model of *declarative disciplinarity* would practically entail abstracting regularity away from the apparent chaos and imposing order in the form of a "disciplinary model" in terms of such questions. Compared to the dialectic of order and chaos as suggested by Budin (1996b, pp. 63; 125-127)), this model would basically constitute the "skeleton" of a *discourse-world model* that could within limits be used for an *a priori* subject delimitation, as well as for term description (context insertion) based on the delimitation, which would emerge from experiential contexts rather than from abstractions that must ultimately be (re-)enacted. Our outline for formulating the *declarative* aspect of *disciplinarity* (and therefore its model) flows from this understanding of *experiential complexity* that has now been formulated. The larger model will now be developed further by incorporating considerations on declarative subject delimitation and a number of case studies.

6.2 Declarative subject delimitation

Subject-driven, systematic terminology description based on delimited (read: defined) subject fields has been criticized as an unrealistic requirement for terminographic projects (Sager, 1990, p. 220). In principle, the tradition of *generic terminography* recommends that subject classifications and delimitations are conducted (relatively) *a priori*, i.e. before any discourse material is processed, and that the field is then narrowed down iteratively (Rondeau, 1980, p. 51, Picht and Draskau, 1985, p. 165).

The basis of the subject classification seems often to be seen in using hierarchical classifications[9] (Cabré, 1999, p. 45) for which seamless definition systems (Besse, 1997) or *concept systems* (4.2.2.1) could be seen as examples. As such, they certainly reflect the ideal of a tidily stratified discursive universe (as opposed to a *multiverse*, (4)) *prototypically* exemplified by *monodimensional classification* (see page 100). The similarities between the idea of *concept system* and Trier's clear-cut, seamlessly mutually delimiting (*paradigmatic*) *semantic* or *lexical fields* (5.4.2.4) appears striking, though it has been pointed out that there is a significant difference:

> A concept system belongs, not to the general vocabulary of a language, but to a specific sphere of knowledge. Although a concept system could correspond to just one particular section of reality [...] it is not held to meet any such requirement. Data comprising a segment of knowledge which is represented in a concept system do not have to be derived from the same area of reality, or point in the object spectrum. In effect, it may or may not reflect postulates on the structure of this spectrum.
> Antia, 2000, p. 105

Simply put, this implies that a concept system belongs to a specific subject field, but its concepts and their organization can be *contingent* on the social reality of this field, and therefore need not display an ideal structure.

The underlying circularity (and what now could be considered the characteristics of *contingency* and *stratification*) in defining terms, concepts or fields as *specialized* has already been pointed out (4.2.2.2): areas of specialization "encode" social risk-spreading arrangements and

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[8]The question of whether the *stratification* is "real" or "imagined", i.e. whether the document does or doesn't refer to another in an oblique way is practically meaningless in this regard; hence the inclusion of considerations on *cognitive bias*.

[9]rather than *categorizations*, as they are discussed on page 100.

can thus be seen as *contingent* on the such arrangements as they emerge in different societies or *semantic systems*. It can be assumed that no attempt to define terminology *in relation to* a specialized field (neither Budin's, above, nor mine, (2.3.2, § 1)) is likely to escape from it.

Disciplinarity can now be understood as analogous to *scientificity*: it reflects the *property of being considered a specialized discipline*. We can assume this to be a property which cannot be satisfactorily defined, except perhaps by *operational definition*.

Besides this first circularity, which can now described in terms of *experiential complexity*, there is another form of circularity that could be characterized as logical circularity or self-reference. It implies that both a concept as associated with a term and a discipline as associated with a field name are to be understood in the same terms:

> [A] *category* is more than the aggregate of its characteristics. Most categories are flexible. A definition of necessary and sufficient characteristics of a category cannot be given and there are no clear boundaries. The flexibility can be observed in the categories referred to by *the terms blotting, cloning, splicing, mapping, sequencing (which are all techniques in molecular biology*) and **biotechnology**, **molecular biology**, **molecular genetics**, **genetic engineering** (*which are all* **names for disciplines** *in the life sciences*)
> Temmerman, 2000, 8, my emphasis

This example documents the phenomenon in sociocognitive terminology. By the same token, it can be seen to extend to traditional terminology, again with view to models of *concept systems*: in this case, the name of the subject field will simply be the most generic term on top of the network representation. Explained on the example of the system of definitions, all subordinate concepts (i.e. subfields, like those enumerated above) would need to appear in the text (presumably the sentence) of the definition of this topmost concept.

From a linguistic point of view, this is formally correct as the name of a subject field is indeed a term[10] which can be associated with whatever conceptual structure seems appropriate.

However, the *thick concept* (1.1.1.2) assumption of *disciplinarity* entails that subject fields need to be viewed differently: "subject field" not only constitutes a conceptual space, but an experiential context. This follows from the ideas of *embodiment* (1.4.1) and *thick description* (1.1.2) and can be supported by the observation that the introduction of terminology in the form of texts involves *rituals*. A historical example would be the process of scholastic discourse production (4.2.2.2), whose stage of *emendare* involved the public defense of the document (Lortal, Lewkowicz, and Todiarascu-Courtier, 2005). Pavel observed, with regard to *neology*, that:

> Conceptual and terminological changes do not occur by decree but by degrees, through "*negotiations at multiple sites among those who generate data, interpret them, theorize about them, and extrapolate beyond them to broader cultural and philosophical significance*" (Hayles 1991:4). During these negotiations *the creator of a new term ritualizes, frames, and stages situations (symposia, informal discussions, written materials) for signaling it to other actors (colleagues, publishers, grants officials, translators, vocabulary makers and users) so that they can interpret and react to it.* He tries to persuade and expects his creation to be validated
> Pavel, 1993, my emphasis

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[10] The nucleus of this term would almost invariably be a noun or deverbative, in the context of sub-fields a noun or adjective phrase with an appropriate determinant indicating the relation to another field, or an affix fulfilling the same function.

An approach to the *declarative* aspect of the *thick concept* would therefore have to account not for hierarchies which could in principle be derived from a thesaurus of classification terms (as suggested, e.g. by Picht and Draskau, 1985, pp. 165/166) but for what is here termed the *topical* and *temporal dimension* of that context. An account of the *procedural content*, on the other hand, would need to include *conventions* as they form an aspect of culture (1.1.1.1), which might again be sectioned (at an arbitrary depth of three) into culture, sub-culture, and sub-sub-culture.

The "thick" character of *disciplinarity* might be argued as follows: researchers have to contend with social and cognitive *experiential complexity* by abstracting regularities away from unstructured sense data. In doing so, they can be seen to rely on *heuristics,* which may feature *stereotypical* conceptualizations. These may in turn become *conventional* in the form of some *intersubjective* idea of *disciplinarity.*

The remainder of the present chapter will be dedicated to the induction of the *topical* and *temporal dimensions* or the *declarative* content in the model of *disciplinarity* in a way that is analogous to the previous elaboration of *scientificity.*

The following chapter will address itself to conventional and stereotypical agendas and perspectives that need to *simulated* (5.4.2.5) *in conjunction with* the traces or *auras* that contexts like those discussed below may have left in the organization of some discipline. This is a measure of arbitrary division or distinction. Practically, the one cannot be imagined or experienced without the other, as will emerge from the examples.

6.2.1 Topical delimitation

The first aspect of *topic* is at a first glance virtually indistinguishable from or at least very similar to the traditional idea of subject delimitation. Our understanding of *topic* practically replaces the problematic notion of subject field in our terminology and harks back to the etymology of the term, as well as to Eugen Wüster's 1985 understanding of "topicality". A further influence can be seen in Floridi's (2004) usage, which understands by *topic* the aggregation of "facts, data, problems, phenomena, observations" with which a discipline concerns itself.

In terms of the first component, we need to point out that the term *topic* ultimately derives from ancient Greek τοπος, meaning "place" (Barnhard, 1995; Harper, 2012). It could thus be understood in terms of the *structural metaphor*[11] of "place" as a place where people might meet to discuss a *topic* or a place or territory that people might have disputes about[12].

The second component can be considered to follow from the first, if one takes a *document* to be the *place* where *topics* are set down in writing. Wüster realized that *topics* need neither abide by strict logic nor an ideal ontological order when they structure a piece of discourse to be produced or received. He remarked on the subject of the classification (or rather *categorization*) of topics (Ger. *Themaklassifikation*) that:

> Not everything that looks like a concept system is really a concept system. A number of ordered terms (Ger. *Begriff*) does not describe a concept system when there are no conceptual (Ger. *begriffliche*) relations between the members of the

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[11]"Structural metaphors allow us to [...] to use one highly structured and clearly delineated *concept* to structure another [p. 62] but the same natural dimensions of experience are used in both [p. 179] [...] structural metaphors are grounded in systematic correlations within our experience. [p. 62 ... they can be expressed in the form] A is B [p. 109]", Lakoff and Johnson, 2003, p. 179

[12]ARGUMENT IS WAR, which is another common *structural metaphor* according to Lakoff and Johnson (2003, p. 179).

> system – that is, neither logical nor ontological relations – but merely a topical
> relation. "Topic" here denotes any subject which is treated in a document. Topics
> are concepts, too, yet a topical relation does not describe the nature of the terms that
> comprise it but merely their occasional occurrence in a document. Their relations are
> *contingent relations of (co-)occurrence* (Ger. *Vorkommbeziehungen*). [...] *A topical
> hierarchy is a series of topics with a classificatory motivation; in it, every topic is
> superordinate to the following in the wider sense, so that it includes all those below
> it. A subordinate topic cannot be treated without reference to the superordinate. [...]
> Topical hierarchies are much looser than conceptual hierarchies.*
> Wüster, 1985, 23/24, my translation and emphasis

In terms of our idea of *disciplinarity*, the concept of *topic* fits both the observation that the
objects of (at least the most *prototypical*) subjects in the human sciences are *topical* to the
extent that one cannot treat the topic of sociology without any reference to the subordinate
topics of culture (e.g. cultural anthropology) or the human individual (e.g. psychology).

An example for this can provided by the following topic hierarchy found in Bertalanffy 1968a,
p. 188. The topic series concerns the *human sciences* (antiquated: "sciences of man", ibid.) to-
gether with the *social sciences* that are thought to include "sociology, economics, political science,
social psychology, *cultural anthropology*, linguistics, a good part of history and the *humanities*".

A logical analysis conducted for the sake of the argument would find a co-ordination of top-
level categories which include subordinates in the opposing category, such as **psychology** *and*
sociology which *includes* **social psychology**; another issue (though more lexically than logi-
cally) might be the appearance of a synonym for the superordinate category in the extension of
a subordinate category (**human sciences** *includes* **humanities**), in conjunction with a reiter-
ation of the former phenomenon (**history** *and* **humanities**). Therefore, the series can be seen
as an example for a loose *topic* hierarchy. It has likely been composed with the help of some
heuristic and thus likely displays *bias*, at least when seen from the logical perspective.

In terms of *topic* as a metaphoric τοπος or "place" to claimed and mapped, we can, perhaps
as a ramification of the above effect, observe the effect of either "struggle" or "charting" in the
following fragments from three disciplines that incidentally cover the *topic*[13] of terminology in the
sense of "the structured entirety of concepts and their associated representations in a specialized
subject" (after Budin, above).

6.2.1.1 Terminology

Assimilating the concept of *topic* and the above understanding to our practice of interpretation,
we can once more turn it back onto our own discipline. With regard to terminology, we can
observe a certain tendency to tentative chart the *topos* before claiming it:

> [T]erminology has a need for a subject classification and has used the concept of
> thesaurus structure [so that] it has been linked with **information science**. [...] The
> concepts and methods terminology genuinely borrows from other subject fields and
> disciplines are of a rather general nature. From **philosophy** and **epistemology**
> it has taken theories about the structure of knowledge, concept formation, the na-
> ture of definitions, etc.; from **psychology** it has borrowed theories of perception,
> understanding and communication, etc.; from **linguistics** it has borrowed theories
> about the lexicon and its structure and formation; with **lexicography**, finally, it

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[13]Logically, it follows that if *topics* are concepts, they can be defined. A more intuitive fit obtains however
between the ideas of *topic* and that of *explication*.

> shares methods of structuring and describing words as well as experience about the presentation of information about words.
> Sager, 1990, 4, my emphasis

In terms of the definition, we can interpret this fragment to refer to the *topic* of the "specialized subject" as a topos occupied by *information science* and the *topos* of "concept" as occupied by the mutually overlapping fields of *philosophy, epistemology* and *psychology*; the *topos* of "representation" might be seen to fall to *lexicography* and *linguistics*. Last but not least, one could interpret the *topos* of "structured entirety" as falling into the responsibility of *philosophy*, which might be cogent with a *coherentist* conception *scientificity* (3.3.3). In the final analysis, no particular *topos* is assigned to terminology research as a subject or *topic* in the Wüsterian sense. Unsurprisingly, we read elsewhere that the same author "denies the independent status of terminology as a discipline" (ibid, p. 1).

6.2.1.2 Specialized lexicography

That this is not a common belief should follow from the interpretation of our second fragment, which originated in the context of the *topic* of specialized lexicography:

> Although traditionally LSP lexicography and terminology/terminography differ in terms of approach, in our opinion they are **not autonomous, non-interrelated disciplines, as in several respects they deal with the same subject matter**. We therefore do not agree with those terminologists who, in their attempt to demarcate terminology vis-a-vis LSP lexicography, only widen the gap between the latter and terminology/terminography [.]
> Bergenholtz and Tarp, 1995, p. 10

Here it is admitted that both disciplines are working in "the same place". The aspect of "struggle for turf" is emphasized in an appeal "not to widen the gap", whereby the "gap" is not seen as a gap between *topics*, but as one that stems from different ideas of how the same topic should be treated. This is indicative of a *discourse-specific, cognitive stereotype* (2.5.5.1) that expresses a second-order belief about what "typical" terminologists are supposed to think and argue. The argument (here in the strictly rhetorical sense) is however not particularly pointed, as opposed to that expressed in the next fragment.

6.2.1.3 Specialized Language Studies

The gist of this argument has already presented in (1.1), where it has been inserted into a different context and therefore interpreted differently. Here, we are concerned with the treatment of *topic* and its rhetorical expression. For this, it must be inferred that the *topic* of specialized linguistics covers the entirety of special language, which includes its lexicon – the terminology – but is not restricted to it.

As the *tenor* (or the "relationship of addresser and addressee, as reflected in the use of language", Hatim and Mason, 1990, p. 243) is important, the German text fragment has been included and translated so as to echo the *tenor* of the source language fragment:

> In der an die klassische Logik angelehnten und streng onomasiologisch vorgehende Terminologielehre sind die außersprachliche Welt der Sachen und die sprachliche Welt Wörter streng getrennt, dazwischen wird eine Stufe von wissenschaftlich klaren, aber sprachlichen und linguistisch nicht beschreibbaren Begriffen angenommen (vgl.

Felber/ Budin 1989, 12; 20; 32; 69 ff). Ähnlich wie die sprachorientierte Wissenschafts-logik (vgl. Lorenzen 1985, 30 ff) kann auch die linguistische Wissenschaftssprachfor-schung mit dem Konzept des Begriffs **nichts anfangen**, weil häufig unklar ist, ob Be-griff auf der signifiant- oder der signifié-Ebene des sprachlichen Zeichens anzusiedeln ist (Kretzenbacher 1991, 195f). Die Vorstellung einer vorsprachlichen Begriffs-Ebene führt dann zu einem so **sprach- wie wissenschaftsfernen** "Postulat der Eindeutig-keit", ja sogar der "Eineindeutigkeit" von wissenschaftlichen Fachwörtern, also dem Ausschluß sowohl von Synonymie als auch Polysemie (vgl. Kretzenbacher 1992b, 40ff; Roelcke 1991, 198ff). Für die Linguistik ist der vorsprachliche Begriff eine black box, sie **kann Aussagen nur** über sprachliche Phänomene machen.

Translation: Terminology science, which is close to classical logic and prefers a strictly onomasiological mode of operation, assumes a strict separation between the extralinguistic world of objects and the linguistic world of words while assuming a level of scientifically clear concepts between those. It is further assumed that these concepts cannot be described in linguistic terms or by using language in general (compare Felber/ Budin 1989, 12; 20; 32; 69 ff). Like the linguistically oriented field of scientific logic (compare Lorenzen 1985, 30 ff), special language linguistics **has no use** for the concept of concept as it is unclear whether concepts belong to level of signifier or signified in terms of the linguistic sign (Kretzenbacher 1991, 195f). The notion of a prelinguistic realm of concepts leads to the postulate of the unambiguity, even univocity of scientific terms and thus to the exclusion of synonymy and polysemy. **This is alien to language and science alike** (compare Kretzenbacher 1992b, 40ff; Roelcke 1991, 198ff). Linguistics treats the prelinguistic *concept* as black box, **it can only make statements** about linguistic phenomena.

Kretzenbacher, 1998, pp. 134/135

Here, the dispute is again about the *treatment of the topic* rather than about the occupancy of the *topos*, yet the manner in which it is phrased would likely alienate the English-speaking reader: it is suggested that the terminologists (whose beliefs are construed *stereotypically*, even if the critique is addressed to a specific *prototype*) are not only wrong in their assumptions, but "totally wrong".

The belief in question is portrayed as *unscientific*, which involves the activation of a *meta-scheme* for *scientificity* in the author. Insofar as we can speculate about its operation, it seems likely to activate principles similar to those evoked by the gestalt of behaviorism ("nothing beyond the observable [...] could be of interest to science", Glasersfeld, (4.3)) and, in terms of declarative *scientificity*, those associated with *foundationalism* (3.3.2). This seems to be indicative of the observation that *thick concepts* need not be clear-cut but can allow for overlaps, not only in terms of *declarative* and *procedural* content but also between factors here associated with the larger constructs of *scientificity* and *disciplinarity*.

We also find an indication of *disciplinarity* in terms of the *conventions* which make such a *tenor* (apparently) *acceptable* to the target audience. We might interpret these again in terms of *discourse-specific stereotypes*, or, in this case, *text-related stereotype* in particular.

However, as this fragment was found in text formulated in a language other than English, we can surmise that the *meta-scheme* of *disciplinarity* we assume to underlie it might be under the influence of different cultural categories (Bertalanffy, 1968b), which are worldview components we have hitherto not explicitly modeled, and which will be explored later (8.1).

The second aspect of our proposed delimitation practice may be somewhat less controversial. It consists of delimiting subjects by temporal criteria, which, as noted, comprise *time-frame, time-span* and *half-life* of some discourse.

6.2.2 Temporal delimitation

At a first glance, little above our foregoing considerations on *diachrony* and *synchrony* (1.3.2) would need to be added in this regard. However, since the present chapter concerns the *induction of ad-hoc classifications* for *philosophical terminography*, the temporal aspect of subject delimitation (and therefore the *declarative content* of the *thick concept* of *disciplinarity*) might be reconsidered in the light of the praxeological relation between theory and practice, which reveals some disagreement between principles and procedures, as well as in that of some underlying circularities, which our previous discussion showed. If we have suggested that impressions of a clear-cut *disciplinarity* seem to have inspired much work on subject classification, we might well investigate where these precepts might come from and what alternative conceptions (i.e. *heuristics*) could be devised to fit the social and cognitive *experiential complexity* of the task. In recursion to our reflections on *experiential complexity*, these efforts should be seen as attempts to impose regularity on historical contingencies.

6.2.2.1 Timeless philosophical classification

In this respect, we find another overlap or synergy between the models of *scientificity* and *disciplinarity*. If we take as a starting point the *foundationalist* idea that terminology has the "status of a science" due to the adoption of philosophical principles (Alexeeva, (3.3.2)), we might want to ask which influence philosophical ideas might have had on the *practice of subject classification*.

This influence seems to have been significant indeed, and not only for the reason that philosophy as a field of human endeavor predates almost all of the scientific specialties that might engage in such activities (Alexeeva, 2003; Dierse, 1998).

Dahlberg relates with regard to the tradition of philosophical classification (there distinguished from, e.g. library classifications which today would be a *topic* of information science) that "from antiquity until the late medieval period [...] philosophy has mostly been equivalent to the entirety of science", Dahlberg, 1974, 32, my translation).

We can assume – with view to a *long diachronic* timespan – that the classification of sciences was simply a matter of accounting for the circumstances of their dissociation from philosophy. This process of dissociation has likely gone on until the 19th century, when philosophy itself became a specialty by a reversion of the effect:

> Ever since the demise of the grand philosophical systems [... around this time...] natural scientific specialties and psychology, later also sociology and economics became independent [...] As this process ran its course, philosophy became a specialty itself. Vis-a-vis the positive sciences, it retains the task of reflecting on their foundations in the context of logic, epistemology and philosophy of science.
> Dierse, 1998, 1321, my translation

Against this background, it appears that the ordering of scientific fields was considered an important aspect of "reflecting on the foundations of science". Dahlberg states:

> The specific problem of philosophical classifications needs to be seen against the background of what was and is being understood by philosophy [... In the period from 1750 to present] the elaboration of scientific classifications became almost a special field within philosophy, which then began to identify itself as "theory of science" or "science of science". Many philosophical classifications hail from the 19th century [...] they reveal that the epistemological aspect was coming to the fore.

> Dahlberg, 1974, 32/33, my translation

Many of these classifications appear to have been object-oriented in that they classified sciences by their *topic* (in our sense of object; ibid, p. 38). They can be seen as "extralinguistic taxonomies" (compare Kretzenbacher, above) in the sense of Kalverkämper (1998a, p. 11), who also mentions that Eugen Wüster seems to have estimated that there where approximately 300 different subject fields (Drodz, cited ibid.). A finite number of subject fields suggests that the estimate seems to have followed in the footsteps of earlier attempts of philosophical classification and is also indicative of high degree of abstraction.

This also points to a practical problem of using philosophical and similar classifications for the *a priori* ordering of discursive artifacts and the terms that can be isolated from them:

> Most philosophical classification systems are lacking with respect to the small number of hierarchies that they contain; their conceptual systems normally end at the names of disciplines, so that the actual extension of the discipline cannot be derived from them.
> Dahlberg, 1974, 37/38, my translation

If we relate this insight to the previous realization that terminology as an object or topic is shared between several (in our example, a minimum three different linguistically inclined) disciplines and is informed by many other *topoi,* and the observation that topics follow at best a "pseudo-logical" or "pseudo-ontological" organization, then it becomes clear that philosophical classifications like the below can only provide limited orientation:

FIGURE 2   **THE PLACE OF TERMINOLOGY SCIENCE IN THE SYSTEM OF CONTEMPORARY SCIENCES**

Subject Sciences
(social, natural, technical sciences)

Theory of text · Theory of communication · Theory of nomination · Theory of standardisation

Linguistics — Terminology Science

LSP Studies

Psycholinguistics · Sociolinguistics

Information Technology · Cybernetics · Mathematics

Semiotics · Cognitive Science · Science Study

Philosophy · Logic · Methodology

Epistemology · Theory of Definition · Theory of Classification · Theory of System Variation Study

Figure 6.3: A philosophical classification of the subjects which are either part of, aspect of, or source for terminological concepts, according to Leichick and Shelov, 2003, p. 97.

It needs to be remarked that in a *regenerative theory construction* context like *philosophical terminography* (4), this form of classification (one can hardly speak of a delimitation here) is more useful than for descriptive purposes. The reason for this is that philosophical classifications seem to be constructed *sub specie aeternitatis*: they do not allow for change of the disciplinary (i.e. topical) landscape and our map thereof. Specifically, they provide no guide to what we have introduced under the category of *half-life* (1.3.2).

For example, if we consider the above tree of topics from an *embodied worldview* perspective which includes the dimension of *experiential time*[14], we might ask ourselves whether all the disciplines or topics are still extant in the form that their associated terms suggest, or whether they have already mutated, divided or disappeared; and if they are so structured in all or only a specific number of wider cultures and natural language communities.

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[14]Glasersfeld, 1991b; from a historical point of view, this would be the present, or the diachronic span a particular person remembers; it is fair to assume that much that falls outside of this span needs to be constructed from *contingencies*, maybe in terms of what Prat (cited in François, 1999, p. 206, François, 2002) termed *aura*. This term denotes "what may remain of a system after its demise, and what it could mean practically". Examples include "petrified fossils, [...] hulls of sunken ships, [...] prehistoric tools, [...] the transmitted messages of disappeared prophets, philosophers and scientists", ibid.

Regarding the phenomenon of *stratification*, we might state that philosophical classifications present *ideal layers of paradigmatic construction,* while the *induction* from *syntagmatic examples*, e.g. the data prepared in the following, is likely to find the more "natural" appearing deformed shapes which result from *progression, regression, convergence, divergence*, and *prematurity.*

6.2.2.2 Progression and regression

It can be stated with some certainty that most recent theoretical works that deal with the description of scientific terminology or the philosophy of science (Budin, 1996b; Budin, 1996a; Ahmad, 1996a; Kageura, 2002; Temmerman, 2000) at least implicitly subscribe to the idea of a persistent evolution or progress of the fields that they describe. In the early Kuhn's (1970, p. 170) words, this idea can be subsumed in the statement that "to a very great extent the term 'science' is reserved for fields that do progress in obvious ways".

This is implicitly reflected in Kristiansen's understanding of complexity in the form of the apparent belief that sciences can be seen to divide and diversify constantly. A similar perspective would also emerge as the commonsense conclusion from our interpretation the historical *auras* on the subject of philosophical classification discussed above.

The "Strong Programme" of science and technology studies and radical constructivism challenge this view. With regard to the former, Sismondo states that the study of these subjects should, as a matter of principle, be "symmetrical in its style of explanation" and account equally for "truth and falsity, rationality or irrationality, success or failure" (Sismondo, 2010, p. 47).

Von Glasersfeld stated from an instrumentalist perspective (1983) that:

> If philosophy of science is to give a plausible account of how scientists acquire what they consider to be knowledge, the conception of steady growth and expansion is clearly inadequate. *The history of scientific ideas shows all too blatantly that there has been no over-all linear progression.*
> Glasersfeld, 2001a, my emphasis

The construction of a model of the *thick concept* of *disciplinarity* in *philosophical terminography* may at the first glance not seem to have a great investment in such debates; after all, questions of the historical development of a field may simply be construed as more *contingencies.*

On closer inspection, however, it would emerge that a non-linear view of scientific development can tell us a great deal about the relationship between philosophy and science, and therefore provide us with *heuristics* for the study of *philosophical terminology*, which has an immediate bearing on the goal of *regenerative theory construction*. This should be obvious with regard to considerations of the model of *scientificity*, especially with regard to *naturalism*, (3.3.1).

With regard to the relationship of philosophy and science that a non-linear perspective suggests, we need to contrast it with the linear view. If the latter prevails, then the development of science presents a steadfast march towards truth, which entails both a constant diversification of scientific fields[15] and a progressive emptying out of philosophical *topoi*. On the non-linear view, however, that relationship would become more complex, suggesting the possibility not only of scientific progress and the multiplication of specialties but also of their *convergence* and possible *regression* to philosophy, whether by *obsolescence* or *prematurity*. Especially the last possibility will be considered here, as it has a special bearing on this work.

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[15]As more facts are more difficult to manage, there would have to be new negotiations about who is going to take care of what topic and therefore about what everybody else can from then on safely ignore (4.2.2.2).

6.2.2.2.1 Convergence

Most readily reconcilable with the progressivist vision would be the phenomenon of *convergence*, which is in some sense the inverse of multiplication by subdivision: as insights and interests converge, new disciplines are formed as newer subfields swallow up a number of older ones. This can be seen be seen in Figure 6.4 (on page 172).

The visualization of a quantitative, scientometric study of the formation of neuroscience as a scientific discipline (Unknown author, 2009) demonstrates the phenomenon of *convergence*. Its author, Moritz Stefaner, analyzed the citation pattern of 8000 scientific journals within a *short diachronic* span of ten years, and induced the creation of a discipline of neuroscience from an increase in mutual citations between articles associated with different disciplines[16] (ibid).

Arguably, this has not been followed by a disappearance of the original set of disciplines, which suggests that this form of *convergence* contributes to the multiplication of disciplines by a mechanism other than straight-forward subdivision. However, this is still a phenomenon internal to the domain of the life sciences as it does not involve any interaction with the field of philosophy.

6.2.2.2.2 Regression

The next case not only exemplifies this interaction, but also highlights our observations on interpretation as context-insertion, *topicality* and the importance of subject delimitation and therefore of the model of *disciplinarity* in general. The term *regression* should not be understood as a negative value judgment: it merely implies increasing the distance to the object in order to see its full extent or critically reflect on its implications. This stated, philosophy seems to provide apparently a more suitable context for such activities:

- "A basic function of philosophy is to analyse and criticise the implicit assumptions behind our thinking, whether it is based in science, culture or common sense", Heylighen, Cilliers, and Gershenson, 2007.

- "[P]hilosophy has long served another unusual and useful role in intellectual culture; it has acted as an "incubator" for novel, speculative ideas, giving them room to develop to a point where they may become scientifically useful", Godfrey-Smith, 2003, p. 154.

Therefore, *regression* could paradoxically be seen as a symptom of innovation, as suggested by the case of *prematurity* (6.2.2.2.3). Alternatively, it could be seen as a way of "going back to the drawing board" in the wake of the scientific failure of some idea. There are examples to support either way of interpretation.

For example, when one reads the term *evolution* in a contemporary context (or *synchronic* perspective), the almost automatic association – or its "conventional meaning" – would be the concept of the development of species described by the *modern synthesis*, i.e. "Darwin's theory of natural selection combined with population genetics based on Mendel and mathematizised by Fischer, Wright and Haldane" (Schwartz, cited in Gontier, 2006, p. 11). As it is fair to state that the paradigm of *evolution* represents a *prototype* of modern progressive science, its appeal as an *import* (3.3.1.1) or *inter-domain borrowing* (3.3.1.2) to disciplines like terminology research can be readily explained; we can now see how either process of term formation leads to the perception of *retronymy* (5.3).

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[16]It would be interesting to know which subject classification was used to arrive at this clustering of publications, and from which considerations it was derived.

On *diachronic* inspection, it however emerges that as late as 1913, Webster's unabridged dictionary (now incorporated into Cassidy, 2013, my emphasis) still listed a different sense, which suggests that the emergence of the now-dominant sense was *contingent* on the development of the life sciences:

> 7. (Biol.) That *theory of generation* which supposes the germ to preexist in the parent, and its parts to be developed, but not actually formed, by the procreative act; - opposed to **epigenesis**.

The term *evolution* as used in this sense seems to have been in currency, around that time, as a synonym for the so-called *preformation doctrine*, *preformatism* or *preformation theory*. This relation can only be induced by researching either the hypernym *theory of generation* and/or the antonym *epigenesis*. The term *preformatism* in a biological context is today at best of historical interest:

> **Preformation Doctrine**: outdated idea, predating microscopic studies, that organisms exist in a small, preformed state in the germ, and growth (in the absence of development or differentiation) consists of the unfolding of a pre-existing form sometimes called a homunculus. Associated with Italian physiologist Marcello Malpighi (1628–94) and others, replaced historically by blending inheritance and later by Mendelian inheritance. There were two forms of preformation: ovism and animalculism. Aka **preformation theory**, **preformationism**.
> Mai, Owl, and Kersting, 2005, preformation doctrine

As we can see, the antiquated sense of *evolution* pertains to one of the precursor theories that entered into one of the component elements of the *modern synthesis* (a *contingency* phenomenon somewhere between *retronymy* and *topicality*), but is unrelated to the synchronic understanding of *evolution*.

The concept of *preformatism*, displaced from biology, did however not disappear, but resurfaced in philosophy as a metaphysical notion. In this field, it apparently retains some sort of concept status until today:

> *Epigenesis* and *Preformation* are *two persistent ways of describing and seeking to explain the development of individual organic form.* Does every individual start from material that is unformed, and the form emerges only gradually, over time? Or does the individual start in some already preformed, or predelineated, or predetermined way? The questions are part metaphysical: what is it that exists – form or also the unformed that becomes the formed? And they are partly epistemological: how do we know – through observation or inference? The debate has persisted since ancient times, and today plays out as genetic determinists appeal to the already "formed" through genetic inheritance, while others insist on the efficacy of environmental plasticity. Nature or nurture, *epigenesis* or *preformation*, genetic determinism or developmental free will, or is some version of a middle ground possible? These are the *terms of this perennial discussion* [...] *The end of the 20th century* brought discoveries that have challenged the most the prevailing geneticism, and have also begun to replace the extreme forms of either *preformationism* or *epigenesist* with the sorts of interactionist models that were only offered as outlying alternatives in earlier decades. [...] *The nowadays of the 21st century* may take us back to some of the understanding and insights of the early 20th, a time when a balance of *epigenesis* and *preformation* seemed likely, a time for a bit of predeterminism and a bit of cellular free will.
> Maienschein, 2012, my emphasis

As a closing remark, the fate of the antonym *epigenesis* may well be used to highlight another facet of the concept of *contingency*, namely the idea of "systemic alternatives" with reference to *scheme* theory and radical constructivism. Beaugrande's own study of Piaget's "genetic epistemology" (Beaugrande, 1994, § 10, my emphasis) mentions the use of the term *epigenetic* to describe something like the self-modification of *schemes* in interaction:

> Piaget's term '*epigenetic*' suggested that the advanced design of the human organism in its mature state is to be accounted for as a series of internal differentiations, complications, elaborations, and so on, from its elementary stages in early life. Originally, '*epigenetic*' is a *geological term for 'changes in the mineral character of a rock owing to outside influences'*, whereas '*ontogenetic*' would be the more usual term for the *development of organisms* [...] Piaget's terms were influenced by Conrad Waddington's (1957, 1975) geological metaphor of the '*epigenetic landscape*' [.]

Though this interpretation is based on the theory of a metaphoric import from geology, the biological term *epigenesis*, – which is contemporary to *preformatism* – might be seen as a perfectly viable *alternative explanation* for how this process of development *can* be understood (i.e. in analogy to the "theory that new structures and organs develop from an undifferentiated cell mass", Mai, Owl, and Kersting, 2005, epigenesis).

However, apparently due to the interpreter following the path of yet another possible alternative, the term *epigenesis* has disappeared from Glasersfeld's interpretation of genetic epistomology. Glasersfeld (1995) seems to have reverted to the more conventional term *ontogenesis* or *ontogeny*: "Here, as in so many other passages of Piaget's writings, it is crucial to remember that he is concerned with genetic epistemology, i.e., with the ontogeny of knowledge, and not with ontology or the metaphysics of being. (p. 61) [...] Phylogeny proceeds by pruning; ontogeny provides opportunities for learning (p. 156)".

All things considered, the above investigation seems to support Kuhn's observation that discarded scientific ideas seem to return to philosophy for re-incubation:

> When, in the development of a natural science, an individual or group first produces a synthesis able to attract most of the next generation's practitioners, the older schools gradually disappear. In part their disappearance is caused by their members' conversion to the new paradigm. *But there are always some men who cling to one or another of the older views, and they are simply read out of the profession, which thereafter ignores their work.* [...] Those unwilling or unable to accommodate their work to it must *proceed in isolation or attach themselves to some other group. Historically, they have often simply stayed in the departments of philosophy from which so many of the special sciences have been spawned.*
> Kuhn, 1970, 18/19, my emphasis

We can characterize this phenomenon as *regression*, or the reverting of terms and *topics* – of which certain terms become characteristic – from science to philosophy. This can be seen as the *reverse* of the historical process of dissociation earlier characterized and the *inverse* of the *ideal type* of naturalistic *scientificity* (3.3.1).

This case has however only characterized *regression* in terms of a theory and its associated terms. It would appear that in the course of *regression*, "new" philosophical terminology is coined in the sense that the *semantic field* in question was not earlier considered to belong to the *topic* of philosophy. In terms of subject delimitation, we might also investigate an example where this fate has befallen an entire discipline, on the grounds of *contingencies* other than empirical

progress, which was here seen in terms in terms of instrumentation invalidating pre-empirical assumptions.

6.2.2.2.3 Prematurity

The following will demonstrate what Floridi (2004) called *prematurity*, or alternatively, a case of *regression*, depending on one's perspective and sources. The case in point is the discipline or *topic* of *systemics*, a subject label used by François (1997; 1999; 2002) to describe a cluster of systems theories and most of their precursors and offshoots, including first- and second-order cybernetics – therefore also radical constructivism (4) – and General System Theory. In this regard, it might be noted that Bertalanffy (1968a, p. 21) saw cybernetics as a restricted application or sub-topic of system theory, which highlights again the fuzzy aspect of *topicality*.

Generally, the conceptual confusion surrounding this area starts with the question of *what* the topic of this family of approaches is; we would tend to generalize the statement about cybernetics, which forms an element of the *umbrella category*, and suggest that a likely topic are "the abstract principles of organization in complex systems" seen not in terms of *what* they consist of, but of *how* they function (Heylighen, (4)).

As this relates to practically *anything*, a distinction can be made in terms of what phenomena such fields of study apply themselves to; one mayor branch is social systems theory, which can be seen as sub-sub-culture within the social sciences (Abercrombie, Hill, and Turner, 2006, system theory). This would make systemics a field of the social sciences. To complicate matters, this conception co-exists *and* overlaps another branch of systemics which is seen as a field of information theory, here in general terms understood as the theory of information science (Wersig, 2003). The construct is associated with the names *Talcot Parsons*, *Niklas Luhmann*, and, to a lesser extent, *Jürgen Habermas*[17].

The *names* of people[18] seem generally to be the best measure of determining the extent of this *topic* (and possibly many others, especially in the human sciences and philosophy). In Figure 6.5, we can see a representation of the "social network" around the cybernetics-founder *Norbert Wiener*, who can be seen as a *prototypical proponent* of first-order cybernetics. In Figure 6.6, by contrast, we see that of *Heinz von Förster*, who was widely associated with the second-order cybernetics movement.

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[17] The latter two connected in terms of a public debate (Kjaer, 2006, Budin, 1996b, p. 96); an analogous and related debate will be discussed in (8.2.2).

[18] Strictly speaking, associations between people are a *procedural* aspect of *disciplinarity* but might be included here on the grounds that they are situated in a time-frame. As noted, the distinction of the contents of the model of any *thick concept* is entirely arbitrary and only serves to illustrate.
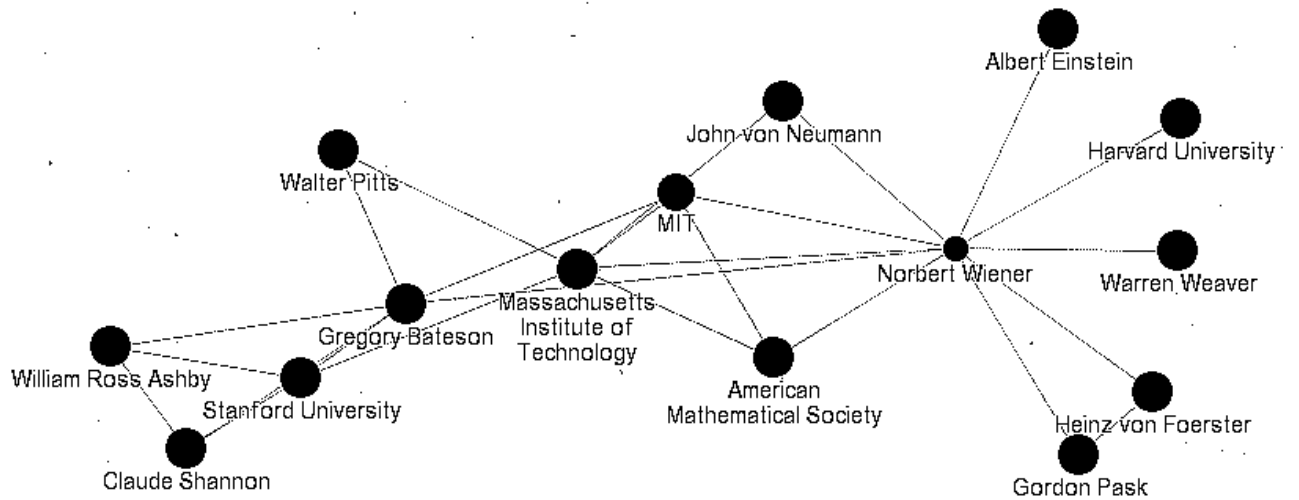
Figure 6.5: Representation of people associated with Norbert Wiener.
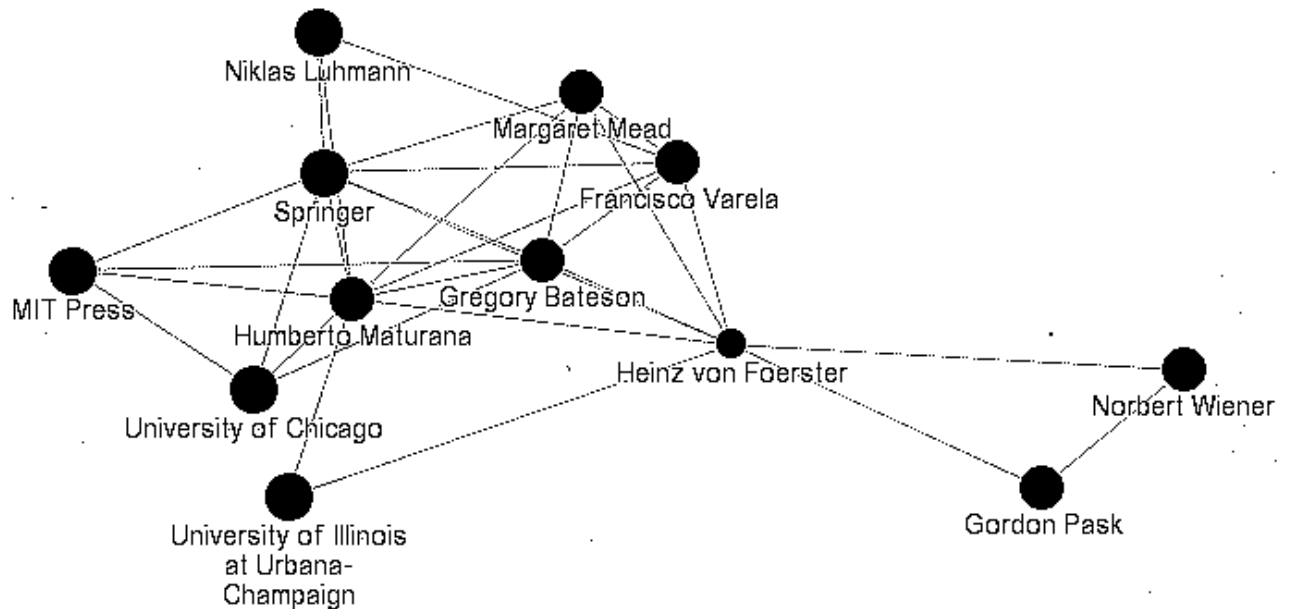
Figure 6.6: Representation of people associated with Heinz von Förster.

The representations have been generated by an experimental product named *Constellations* developed by the company Exalabs (2011) that was briefly available during 2010 or 2011. The product itself was ill documented and there is no indication of what database had actually been used to generate the representations, nor was there any indication of what the relations signify.

A similar product named *touchgraph* had relied on representing cross-references in *amazon.com* or the link structure of websites (Smarty, 2009). It is also no longer available in this form. A cross-check against the academic sources (i.e. those used in the present section) shows however that the gist of the representation is in fact correct – only marginal connections, like the connection between *Wiener* and *Einstein* remain doubtful or unverifiable.

Using lists of the *names of people* (or, in knowledge engineering terms, *named entities*[19])

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[19]These play a role, e.g. in the context of question-answering via ontologies, e.g. van der Plas, Buouma, and Mur

seems a viable method of ordering fields with a high variance of discipline labels, but this will be addressed in the concluding remarks. It is noteworthy that successful experiments regarding the description of philosophical currents of thought along the lines of social relations have already been conducted, e.g. by Athenikos and Lin (2009).

In the context of *regression* or *prematurity* as creation mechanisms for philosophical terminology, the precise extent of the subject field or *topic* only plays a role inasfar as it used as a measure for evaluating claims to this effect.

According to this fragment, for example, the discipline or movement or *topic* of *systemics* marks a partly regressed, partly converged context, whereby the author based his observation on a review of the "key works" of the discipline, which are likely those written by the people charted above. In his interpretation, the works

> momentarily create the impression that systems theory could have been the center of a new form of scientific and theoretical methodology that was to emerge from the unexpected success of neurophysiology, the shocking effects of World War II, the appearance of computers and the intellectual climate of 1960s. *It is now however a largely historical phenomenon, systems theory having lost out in the competition for university faculties, research funds and placement in publisher's catalogues against the cognitive sciences*, the foundations of which it helped establish. However, its traces still remain visible.
> Baecker, 2005, my translation and emphasis

The fragment lists *historical events, technological developments* and *organizational factors* as *contingencies* that help explain this estimate. Baecker's text, which was written in German, seems however to refer to the *local* situation. This English-language fragment presents a different picture:

> In terms of the development and applications of systems theory, while many of its concepts are traceable to the ideas of Von Bertalanffy and Ashby (and the earlier ideas of the nineteenth-century philosophes Auguste Comte and Henri Saint-Simon), in its recent manifestations in management and computer science, the practical use of systems theory can be understood to be the product of a series of converging developments that have taken place both during and after the Second World War. [... A time when systems theory was heavily utilized in military "operations research". Military and civilian applications continued afterwards, e.g. in terms of the space program, PBN ...] Thus *systems theory, particularly in the USA, became considered as a viable means to address the social problems surrounding the redesign of cities, the elimination of poverty and the improvement of education. Systems theory continues to be a central tenet of more recent developments in the study of complexity in organizational environments.* Examples include work by Senge (1990), who describes the important contribution of 'systems thinking' to the understanding and development of organizational learning and who continues to be of *major influence for researchers in the managerial and social sciences.*
> Wilson, 2003, pp. 626/627

So, while the larger historical circumstances described in both fragments appear similar, the estimate of the continued "existence" of the subject or *topic* remain doubtful on a global scale,

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2010, which is also the source of the term. Interest in proper names has likely been marginal in terminology, perhaps because of the obviously referential nature of proper names (Rey, 1995, pp. 26/27; 70), and it seems largely restricted to the application of terminological principles to the standardization of metadata for the so-called *gazetteers*, which are registries of place names (Rogers and Wright, 2006; Wright, 2007).

given the relative success in the USA and the relative failure in Germany or German-speaking countries. We have in any case encountered the suggestion that the theoretical legacy of *systemics* – and therefore its terminology – have *converged* with or been absorbed by two successor disciplines, *cognitive science* and *computer science*, respectively. Given that there are still authors who refer to *systemics* as discipline that is still evolving (François, 1999), one would need to assume that they have reverted to philosophical discourses (Heylighen and Joslyn, 2001 on the second-order movement) by associating with a *regressed* discipline:

> von Glasersfeld's aim is to discover how we perceive and construct reality, to retrace the ways we follow to construct concepts and to elaborate abstractions, and to better understand the relation of the self with others and with the environment in general. Such a work amounts to a *cybernetic-systemic theory of knowledge*, which is needed to put the whole of *cybernetic-systemic* thinking into perspective
> François, 1999, p. 216

And then there are also those who regard the ideas associated with the *prototypical* exponents of the discipline as *premature*, i.e. suggest that the movement or sub-sub-culture has never reached the status of a scientific paradigm in the first place:

> PI [Philosophy of Information; PBN] was perceived to be transdisciplinary like *cybernetics* or semiotics, rather than interdisciplinary like biochemistry or cognitive science. [...] Even if PI had not been premature or allegedly transdisciplinary, the philosophical and scientific communities at large were not ready to appreciate its importance. There were strong programs of research, especially in various philosophies of language [...] They attracted most of the intellectual and financial resources, and kept a fairly rigid agenda, which did not foster the evolution of alternative paradigms. Mainstream philosophy cannot help being conservative, not only because values and standards are usually less firm and clear in philosophy than in science, and hence more difficult to challenge, but also because [...] this is the context where a culturally dominant position is often achieved at the expense of innovative or unconventional approaches. As a result, researchers like Church, *Shannon*, Engelbart, Simon, Turing, *Von Neumann*, or *Wiener* were essentially left on the periphery of the traditional canon.
> Floridi, 2004, my emphasis

Here, some of the lineage associated with first-order cybernetics (compare Figure 6.5) is claimed for the philosophy of information, which, by the gist of Floridi's argument and examples, can be categorized somewhere between *systemics*, philosophy, and theoretical developments within both cognitive science and computer science.

If one takes this categorization as a criterion for subject delimitation, then the works of *Francis Heylighen* and the *Principia Cybernetica Project* (2001) which have frequently been used in this thesis also fall under the heading of philosophy of information and are considered unassociated with the above approach by *contingency*; however, a difference here is that "philosophy of complexity", when used as a synonym for *systemics,* does not consider itself in opposition to esp. postmodern conceptions of the philosophy of language but builds on their observations for modeling complexity (Heylighen, Cilliers, and Gershenson, 2007).

By contrast, Floridi's fragment suggests that a *regression* to philosophy – if one assumes it to have taken place – did not appear to have been particularly successful. It would seem that the

terminology of *premature* fields[20] does not readily dissolve into general philosophical discourse, as has apparently been the case with the terminologies of obsolescent scientific theories, nor does it seem to blend readily into its (sub-)disciplinary landscape.

6.3 Subject delimitation, declarative disciplinarity and experiential complexity

This chapter has provided a discussion of the *declarative content* of the *thick concept* of *disciplinarity*, which serves a *meta-scheme* in *philosophical terminography* and therefore needed to be modeled.

The model of *disciplinarity* was hypothesized to be *complex*, i.e. imbued with a high degree of internal variety to counteract the high external variety that other scholars have described, on a different perspective, as an extrinsic property of *semantic systems*. The modification of the understanding of *complexity* as *experiential complexity* leads to its breakdown into descriptions of the intrinsic experiences of *contingency* and *stratification*.

At the very simplest, situations are *contingent* if they are perceived as the successive occurrence of "one thing after another", without a comprehensible motivation of why this should be so, or complete information to help form a hypothesis of how this came about. This is an aspect of socio-historical experiential complexity: researchers find themselves examining experiences of historically grown contexts whose variety needs to be controlled for and which need to be rendered cognitively comprehensible and predictable. This becomes more difficult as the quantity of such contexts and actors within them rises. The increase in quantity can to no small extent be attributed to the growth of information and communication technology. A *contingency* is a trace element or *aura* in the content of a cognitive artifacts which itself is best described in terms of *stratification*.

The experience of *stratification* can, strongly simplified, be considered the experience of wholes composed of a) many and b) mutually related and interconnected parts which not only interact in a simple hierarchical way (bottom to top and vice versa) but also *chaotically across levels*. This is a description general enough to be applied to subject fields, their component sub-fields and different schools of thought or opinions therein, and must ultimately be inducted from specific documents. This can be inducted from the foregoing exercise of modeling simple processes of information construction and interpretation; the *formulation* of such models can however be quite tedious.

The necessity for understanding *experiential complexity* arises in terms of the goal of *empirical worldview construction* and the application of a view of language and discourse that does not allow meaning (Ger. "*Sinn*") to be *transmitted or propagated* by or through the *semantic system* itself, so that the "black boxes" of system components need to be predicted and explained by cognitive *simulation*.

This metatheoretical decision should not be understood as a destructive critique of the theory of *semantic systems* or the WIKO approach but merely as a consequence of the fact that *philosophical terminography* has other, more microscopic motivations and therefore needs a different

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[20]"A discipline is premature if it attempts to innovate in more than one of these domains [topics, methods and theories, PBN] simultaneously, thus *detaching itself too abruptly from the normal and continuous thread of evolution of its general field*", Stent, cited in Floridi (2004).

set of theoretical instruments. An interface between the macroscopic and the microscopic exists either way and might be established by reference to the terms and traditions of the systems sciences (*systemics*) and *terminology research*.

We have seen that *disciplinarity* can be *declaratively* understood in terms of conventionally acquired background knowledge and *procedurally* in terms of the simplification function which is also associated with *stereotypes*, e.g. the *self-centeredness subject stereotype*. In contrast to interpretations of *stereotyping*, we posited that *meta-schemes* like *disciplinarity* should be seen as flexible, in the sense of being capable of adapting. That *adaptation* is not equivalent to the traditional notion of *representation* is taken as axiomatic. Stratified structures should be assumed to be irregular, rather than clear-cut hierarchies. Their formulation should be approached in operational terms.

Subject delimitation is the practical approach to *stratification*. It can be implemented *a priori* or *a posteriori*, whereby the latter is less problematic. Insofar as it is oriented to existing taxonomies, subject fields might be (mis-)taken for a clear-cut mosaic, akin to "classical" *semantic fields*. Even some models of *concept system* relinquish this idea and admit *contingency*. Taxonomy adoption masks an underlying circularity by black-boxing ignorance arrangements. This aspect can be understood in part by extrapolation from the model of *scientificity*. Another circularity is immanent in the practice of equating concepts/ categories denoted by terms, and contexts denoted by the names of subject fields. It is found in any theory of terminology. Subject fields as contexts involve social rituals and specific *conventions*. For this reason, *disciplinarity* needs to be seen as *thick concept*. *Procedural* (social) and *declarative* (subject-specific) *content* are largely inextricable. However, the *declarative* side can be isolated by applying the traditional Kantian distinction of space and time to categories that organize experience at a very basic level.

From this, the opportunity for *topical* and *temporal* subject delimitation emerges. Topical delimitation exploits the structural metaphor of space for the imposition of organization. *Topics* can display irregular *stratification* and are not bound to requirements of logical order. Like literal places, *topics* may become the site of conflict and are populated by different "communities" with different "customs".

Temporal delimitation, on the other hand, introduces the idea of *contingency*. It may be seen as counter-example to philosophical, timeless taxonomies, which largely stem from a time when scientific specialties emerged from philosophy. Contexts like subject fields were shown as developing historically, which implies progress and regression, convergence and divergence. Either way, subjects fields may appear or disappear. This has implications for the study of philosophical terminology: when a scientific specialty "disappears", its proponents and their terminology can (re-)enter the context of philosophy. In this case, novel philosophical interpretations of a displaced theory's terms may appear as further *contingencies* or alternative readings and lead to the appearance of more *retronyms*. This is also the case when a discipline displays *prematurity*; however, in this case there might be no clear indication of the fate of the discipline, which necessitates looking at "constellations" of its protagonists in time and accounts of the history of the discipline as it is or was situated in various larger cultures. This implies forming a balanced case-specific judgment in terms of diagnosing phenomena like progression or regression, divergence and convergence.

Now, these insights remain to be interpreted in terms of their praxeological value in relation to *philosophical terminography*.

The first implication is that focusing attention on the *stratified* nature of texts as cognitive artifacts assists in the action of interpretation insofar as interpretation implies the "insertion of conventional meaning" (which is itself context-dependent, as will be shown) into its new context or stratum. Practically, this not only extends to terms that can be positively recognized but also to constructs that are purely implicit in the co-text of some argument, and where the terms *themselves* have to be inserted[21] to move the interpretation forward. A demonstration on the example of some of the discourse material from the present chapter will exemplify the point. If we categorize terminology research as a philosophy of information (i.e. identify the appropriate context and thus activate the respective *meta-scheme* of *disciplinarity*), then the "dark" definition of what is taken to constitute an *ontologically complex* system can be resolved by an interpretation which takes the form of a *syntagmatic analysis* (supported by *paradigmatic analysis* as in (6.1.2.2)):

1. A system *is complex or possess the quality of complexity* if it satisfies two requirements simultaneously:

   a) This was not part of the original definition but was introduced in translation. It would be moot to state that translation requires *information construction* (*maker's knowledge*) as the target language form is in no way inherent in the source language set of characters, and much less is its "meaning"; the radical generalization of constructivism highlights the idea that this may be assumed to be the case for the understanding of all linguistic communication. As Glasersfeld's ideas have their root in the practical experience of translation – which was not even restricted to human and natural languages – and computational linguistics, this can hardly be considered surprising (Glasersfeld, 1995, ch. 1).

2. First, it needs to possesses a heterogeneous multitude of related components (Ger. *Zusammenhänge*) which are, in general, hierarchical and mutually coordinating, or the *aspect of being.*

   a) What is described here is in essence what can be termed a *heterarchy*: "many relationships which cut across apparently hierarchical layers so that a system that is subordinate to another system in one respect, appears superordinate in another respect [or as] an ill-defined configuration", Heylighen, Cilliers, and Gershenson, 2007,

3. Secondly, the *aspect of becoming*, which is characterized by the *existence* of potentialities (Ger. *Potentialsituationen*) which entail that any particular component can sometimes trigger spontaneous innovation.

   a) What this is supposed to communicate is captured by the term *emergent property*: "properties that cannot be reduced to the properties of the parts", (ibid.).

Thereby we have constructed information from the fragment by inserting it in its appropriate context. It could now be reduced to an economical sentence like "a complex system is a *heterarchy*

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[21]For this reason, the precise mode of *codification* in *philosophical terminography* is not terminography or lexicography but *textography* (4.2.2), a tendency foreshadowed by but not fully explicitated in sociocognitive terminography (Temmerman, 1996, et pasim). This distinction is however neither simple nor unambiguous and will be treated at the end of chapter, where the structure of the text fragment is reverse-engineered (see Main Conclusion, page 246 ff.).

which can display *emergent properties*". This is however not the stated – and certainly not the only – purpose of *philosophical terminography*. It is premised not only on discourse production, but also on *worldview construction* (4.1). Successful subject delimitation in this regard would presuppose that a critical reception becomes possible, as interpretations can successively be evaluated in terms of *coherence*[22] (3.3.3) and contextualized in a particular philosophy. Here we could evaluate the following fragment concerning *emergent properties*:

> *Epistemological conceptions of emergence have clear and straightforward applications in current scientific contexts.* Indeed, such notions have been carefully defined to capture macroscopic phenomena of current interest within the special sciences. *Whether there are any instances of ontological emergence is highly controversial.*
> Scott, 2007

This could be the starting point of a critique of *ontological complexity* based on the phenomenon of *emergent properties* (4.3), but here we would transgress the stated boundary between philosophy and *philosophical terminography*, besides indulging in metaphysical speculation.

More pertinent is the evaluation of above experiment in terms of the practical concerns of discourse production. Subject fields are not delimited for the sake of mental exercise. Rather, subject delimitation traditionally serves the very concrete goal of terminological analysis, whereby we trespass on another ignorance agreement. Instead of starting from a collection of materials that correspond to some logical taxonomy, modern computational *language engineering* (5.4.2) selects its inputs from electronic corpora:

> Systematic terminology compilation is now firmly corpus-based, i.e. terminology is no longer extracted from previous lists or by individual searches but from a corpus of material. *A corpus is a representative body of texts of a subject field which in this way is confined in a very concrete way.* [... However, t]here [is], as yet, [...] *no common agreement on the scope of anyone subject field*; decisions on subject fields are changing with our perception of what is a discipline and what an interdisciplinary subject and this is likely to remain an unresolved issue in the *dynamic fields of knowledge.* [... T]ext corpora are time- and place-conditioned [...] The increased use of Information Retrieval systems containing running-text [...] in machine-readable form has significantly affected the motivation and indeed methods of terminology compilation. [...] *Terminology compilation is therefore [...] text-oriented and less governed by the desire to construct separate conceptual systems.*
> Sager, 1990, 130-132, my emphasis

The dynamism of electronic corpora is, from the standpoint of *experiential complexity*, a specialized epiphenomenon following from the observation that "we interact with ever more people, organizations, systems and objects" (Heylighen, 6.1.2); corpora represent a concrete slice of *textual archive* (6.1.2.1) as an instantiation of the *paradigmatic* concept. Corpora, insofar as they are selectively compiled by language engineers and corpus linguists (and much more by philosophical lexicographers) can be seen as actively constructed under the auspices of some *meta-scheme* of *disciplinarity*. In the process, some *contingencies* and *strata* are selectively ignored or *assimilated*:

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[22]Or any other value of *scientificity* (3) that a terminographer might adopt. The present work is not intended as ideological prescription or medium for "proselytizing" in any form. Rather, the preference for *coherentism* or constructivism can be explained from our *epistemic interest*, which is part of our subjective and embodied *worldview* (1). The reflection on the role of *stereotype* (2) should however caution us to be above all *self-critical* and thus *radically* (i.e. from the "roots" up) reflect our own premises and principles, which also provide our *heuristics*. This can be seen as the *axiology* component of *worldview*, and will be problematized in (7.1.2).

It is immediately clear that if internal criteria, to do with the *linguistic choices within the texts*, were to be used as the basis of corpus design, the results of *corpus study would be compromised by circularity in the argument*; if, for example, a set of texts containing scientific prose was assembled by someone choosing those whose language seemed to be representative of the genre, and then a linguistic investigation "discovered" that there was a large incidence of the passive voice in them, it would be impossible to tell whether this was a genuine feature of scientific writing, or one of the factors which had influenced the person who chose the texts. [...] One of the most problematic areas for classification is that of "topic", or subject matter. [...] The problem is twofold. One is that of circularity, mentioned above. [...] *The other problem is that there is no broadly agreed classification of topic that can be called on, in fact there are as many classifications as there are researchers. Not only do individuals have clear preferences in the classification of topic, but also there are cultural norms; "gardening" can be a hobby in one social group, an occupation in another, and an unknown activity in a third.*

Sinclair, 2003, 171/172, my emphasis

If we assume that discourse production is motivated and purposive, we might dispense with the problem of circularity by accepting it as a feature of subjectivity. In this sense, the inductive, *a posteriori declarative* content of *disciplinarity* we modeled might be used as a replacement for the horizontal and vertical model of specialized discourse underlying the idea of *discourse-world model* (4.2.2.2). Like Sager's space and time conditioned corpora, the *topical* and *temporal* dimensions of the *thick concepts* of *scientificity* and *disciplinarity* might be reflected and operationalized along similar lines, whereby the problem again collapses into subject delimitation, only that it here becomes the responsibility of the corpus compiler. That delimitations are subjective follows as a matter of principle.

An interesting question, we have previously distinguished as belonging to the *procedural aspect of disciplinarity* however remains to be treated. Reactivating the geological metaphor of stratification, this is the question of the conventional "tectonic" forces that *deform* the strata of subjective delimitations. As noted, it will now be treated in a separate chapter.
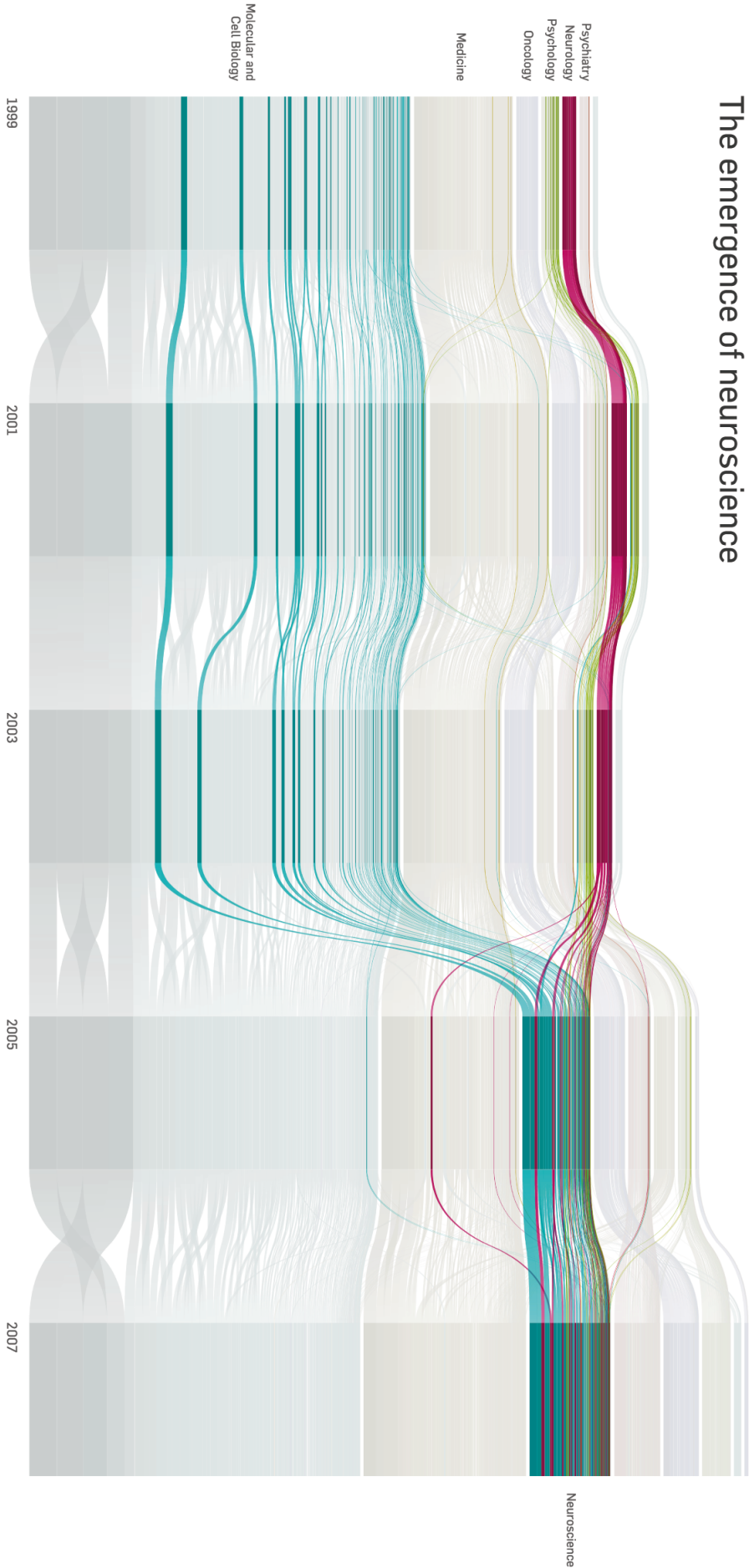
Figure 6.4: Convergence and divergence of neuroscience disciplines, as inferred from journal publications. Source: Eigenfactor, published in Wired Magazine.

7 Understanding procedural disciplinarity

Introduction

In the preceding chapter, we have elaborated some of the aspects of *disciplinarity* that relate to the *declarative* content of the model of the *thick concept* which may be used for subject delimitation. We have learned that these aspects support the delimitation of subject fields, or rather *topics* that lie – from a linguistic point of view– within a *diachronic span* or *synchronic slice* and therefore facilitate the insertion of a term or *argument* into the appropriate context, which is necessary for its interpretation in the process of *philosophical terminography.*

We have referred to this aspect – which largely overlaps conventional subject delimitation – as the "skeleton" of the *discourse-world model* assumed to be controlled by this *meta-scheme* (6.1.2.2), and made frequent reference to the observation that the two components are *practically* inextricable, while a distinction of the *procedural* (social) and *declarative* (conceptual) content is in principle possible.

This assertion is based on the observation that while terms are used to de- and connote both subject fields and the concepts that emerge from the interaction with them, the concept and the field are not identical insofar as the subject field is essentially to be regarded as an experiential context (6.2).

So considered, the conventions of the social context of the field are more central for its successful identification than the logical properties or the prototype resemblances of whatever concept that an interpreter has associated with the field label.

If we regard *disciplinarity* as a *meta-scheme* that can activate and modify both *text-world model* and *discourse-world model* for *discourse analysis-by-synthesis* and discourse production, then it follows that this *meta-scheme* must to some extent be able to *simulate* the *conventions* that prevail within the context, given that "conventions grow out of precedent and social habit" (Hermans/ Fokkema, (2.6)). It can thus be inferred from the ordering of contingent perceptions.

We concluded in our general introduction to the concept of *stereotype* in terminology (2) that conventions would be tacit and therefore unlikely to be found on the immediate surface of the text, a hypothesis which can be corroborated against the empirical example of an "unusual" tenor provided in (6.2.1.1) as well as against the *componential analysis* of the culture-bound and therefore in the anthropological sense "thickly" connoted term of (Ger.) "*Lehre*", whose affixation seemed to alter or inflect the connotation of compounds such as "*Terminologielehre*" (2.3.4) and which we found to have an impact on different understandings of what could now be understood as the *topical* context (6.2.1.2) that this term indicates; from this understanding, a preferences for a specific style of *scientificity* and a different mental "disciplinary map" (*declarative disciplinarity*) may follow. This can at least be put forward as an explanation in terms of our praxeology, which includes a *theory of mind* as "ontology" with predictive and explanatory function (4.3).

It would be tempting to explain such phenomena purely in terms of *stereotypes* (actual *stereotypes* as well as hypothesis about stereotyping) or – in a mono-causal interpretation – on the

grounds of the Whorfian hypothesis[1]:

> It is Whorf's view that the *linguistic patterns themselves determine* what the individual perceives in this world and how he thinks about it. Since these patterns vary widely, the modes of thinking and perceiving in groups utilizing different linguistic systems will result in basically different world views.
> Fearing, cited in Bertalanffy, 1968b, 222, my emphasis

This hypothesis and various interpretations and variations thereof feature in translation studies mainly in the form of a critique of the "strong view" or "linguistic determinism", which is seen as "untenable" (Hatim and Mason, 1990, pp. 29/30); in General System Theory, it has been received mainly due to its interest in the hypothesis' implications for formal categories and occurs in the weak form as "*principle of relativity* which holds that all observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are *similar*" (Bertalanffy, 1968b, 222, my emphasis).

The weak view also seems to prevail in Glasersfeld's constructivism, where the interpretation runs as follows: "Put in the simplest way, this hypothesis states that how people see and speak of their world is to *a large extent determined* by their mother tongue" (Glasersfeld, 1995, 3, my emphasis).

In this formulation, the hypothesis is acceptable as a starting point but not as the sole key to the *procedural* aspects that a model of *disciplinarity* must posses if it is to be used as an instrument in the service of *philosophical terminography*, especially with regard to being a potentially *viable* approach to the perennial problem of multilingualism (3, § 1) in terminology and to the context-insertion of the diverse *explications* of *retronyms* in any given special language.

Ostensibly unrelated, the formulation relates back to the observation that a "variety of factors are at play [... among them] the types of training provided to researchers, *social pressures* associated with advisers and *colleagues*,and *preferences* for obtaining certain types of insights during the conduct of research" (Weber, 1.2.1) originally related to the (from our perspective pseudo-)problem of the *discursive stereotypes* "interpretivism" and "positivism" and therefore to an experientially "real" problem associated with the *heterarchy* of culture, sub-culture, and sub-sub-culture which we derive from Kristiansen's observation that disciplinary stratification may be related to indeterminate positions of contexts as super- or sub-disciplines and the differentiation of different schools of thought within either (6.1.2.2).

Mapped to the levels of hierarchy and internal variety that *worldview*, *meta-scheme* and *scheme* (and therefore the action-guiding or *procedural* elements of the *thick concept* of *disciplinarity*) are assumed to control for, we would obtain a table which assigns an "area of responsibility" to each "control center", providing that constructs like *thick concepts* cannot be imagined as sharply bounded and that interference between them (*perturbations*, to the extent that such are characterized by a "mutual incompatibility of goals the organism has chosen and/or of the means used to attain them", Glasersfeld, 4.2.2.1) always remains a possibility:

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[1]The original wording of the hypothesis runs thus: "We cut up and organize the spread and flow of events as we do largely because, through our mother tongue, we are parties of an agreement to do so, not because nature itself is segmented in exactly that way for all to see", Whorf, cited Bertalanffy, 1968b, p. 222. Taken at face value, most argument at *contingency* and *convention* can likely be construed as "Whorfian".

Level of model	Topic of experience	Associated construct
Worldview	Culture	Conceptual system
Meta-scheme/ thick *concept*	Sub-culture	Declarative disciplinarity Scientificity, discourse-world model
Scheme	Sub-sub-culture	Procedural disciplinarity, discourse-world model, text-world model

Figure 7.1: Levels of control in the model of philosophical terminography.

As previously noted, the model is hypothetical and should be considered as a model of a *heterarchical* system, which is best viewed in terms of the middle-out perspective: control is exercised neither exclusively "bottom-up" nor "top-down". This should follow as a consequence of the considerations in Chapter (1).

The final assumption, which is to some extent contingent on this, is that of *observer autonomy* (the "observer [...] shall be allowed to stipulate his own purpose", Foerster, 2003a).

It is an axiological[2] belief which counters not only strong linguistic determinism but also biological determinism[3] and social determinism, i.e. the belief that the models *only* reflect social pressures and no initiative on part of the observer or observed.

We will start with a thought experiment detailing this initiative, or *cognitive interest*. This entails deducting the basic interests of *instrumental reason* and *phenomenological understanding* which serve to reflect on the interest of this study and point out the commonalities and differences of the two *agendas* on a level that transcends "folklore" and *stereotyping*. This also provides an opportunity to admit axiological concerns, on the back of extant debates in this regard.

In the following chapter, the schematic presented in the table will be fleshed out inductively, using another series of case studies.

A synthesis of the complementary functions of *scientificity* and *disciplinarity* as categorization instruments will conclude the experimental part of the thesis, which will then be followed by the final discussion of *paradigmatic* relational concepts and the analysis of text fragments as a concretization of *philosophical terminography*.

7.1 Cognitive interest and agenda

The idea of *cognitive interest* – which has been introduced at the very beginning of the thesis without further problematization – starts from the premises of *subjectivity* (1.1.3) and *embodiment* or *situatedness* (1.4.1). In the context of this chapter, it should be seen as related to the idea that observers can not only obtain different impressions from imposing different patterns of organization on *contingent* phenomena (6.1) but that will also actively seek to identify with and argue for one kind of interpretation over another (1.2.1).

This can be exemplified on the terms *cognitive interest* and *epistemic interest* themselves; both are loan terms from (Ger.) *Erkenntnisinteresse,* which was perhaps not necessarily coined but

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[2]As will be seen, *axiology* does have a role to play in relation to *agendas*, or organized *cognitive interest.*

[3]An explicit discussion of these variants is not intended but may be inferred from the dichotomy of *preformatism* and *epigenesis* included as a case study under (6.2.2.2.2). The keyword here is *metaphysical*: determinism entails holding strong beliefs about things that cannot be known and therefore does not seem to add any useful insight or perspective to our discussion.

prototypically used by the literary critic and communication scholar Siegfried J. Schmidt[4]. They are likely to have gained entry in the discourse of *terminology research* through the influence of Robert de Beaugrande on Gerhard Budin and then to have gradually spread to the usage of other authors from there. The following samples in German and English, presented in chronological order, may corroborate this hypothesis:

(7.1) However much data a researcher may gather and evaluate, data can be significant only with respect to the COGNITIVE INTERESTS of a discipline (cf. Kuhn 1970; Schmidt 1975): commitments to seeking certain kinds of knowledge. Especially in linguistics, what constitutes worthwhile data, or how data should be treated, is by no means self-evident. (Beaugrande, 1980, ch. 1, § 1.5, capitalization original)

(7.2) I see no way to determine, much less 'account' for, 'everything that is encoded', much of it probably tedious and irrelevant in any case. Instead, we all 'decide to select certain features to attend to'; and we do so not in any 'arbitrary' fashion but in alliance with what I have termed the 'cognitive interests' of the discipline (translating German 'Erkenntnisinteresse', from Schmidt 1975) (Beaugrande 1980: 2). (Beaugrande, 1998)

(7.3) Begriffe und Begriffssysteme strukturieren Objekte und Sachverhalte kontextgebunden. Begriffssysteme (wissenschaftliche Terminologien) sind Realitätsausschnitte von einer bestimmten Perspektive, die durch ein bestimmtes Erkenntnisinteresse festgelegt wird. (Oeser and Picht, 1999, p. 2174)
Translation: Concepts and concept systems structure objects and facts in a way that is determined by context. Concept systems (scientific terminologies) are cross-sections of reality shaped by a specific perspective, which follows from a specific epistemic interest.

(7.4) The orientation of the paper, i.e. the epistemic interest of its author, is to contrast two positions modernism and post-modernism – by summarizing their major tenets and to reflect on the intensive debates about post-modernism between defenders and those who oppose it. (Budin, 2007a, p. 61)

Featuring the problematic category denoted by (Ger.) *Erkenntnis* which we have already encountered (2.3.4.2), the secondary coinage also suffers from the perennial problem of a distinction made in German between *Wissen* and *Erkenntnis*; the former conventionally means approximately "knowledge", which is also the approximate denotation of the latter.

Erkenntnis however tends to connotations of either "revealed" or "metaphysical" and "transcendental knowledge", as can be exemplified on a translation experiment regarding the text Glasersfeld 1986. This publication is titled (Ger.) *Wissen ohne Erkenntnis*, which translates literally as **knowledge without revelation.* Under consideration of the content of the text, which problematizes the influence of classical epistemology, or (Ger.) *Erkenntnistheorie*, *"knowing without knowledge"* could be suggested as a more appropriate rendering.

By contrast, the connotations of *Wissen* are more practical; one would speak of *Fachwissen* (specialized knowledge) but never of **Facherkenntnis.* Traditional epistemology in German, as

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[4]He also happens to be a "friendly" critic of the constructivist community (Schmidt, 2010), has edited two important collections of monographs on radical constructivism (Schmidt, 1987a; Schmidt, 1992) and acted as the translator of texts by von Glasersfeld and Maturana into German (ibid.). On these grounds, one could associate the term with the context of constructivism and consider all use subsequent to 1975 as *interdomain borrowings* and the term as *retronym*. However, due to the deformed *stratification* of contexts all such delimitations need to be considered as relative.

noted, is termed *Erkenntnistheorie*; constructivists, in *opposition* to this, seem to prefer the unusual term *Wissenstheorie* (e.g. Glasersfeld, 2001b).

With this observation, we have entered into the heart of the issues under discussion in this chapter.

If (Ger.) *Erkenntnisinteresse* is *deliberately* rendered as *epistemic interest* (7.4), then a *cognitive interest*, or "commitment to seeking certain kinds of knowledge" (7.1,7.2) has already been expressed. The exercise of the philosophical terminographer's *theory of mind* or (in this case) *psychological imagination* (or "ontology", (5.4.1.1)) consists in interpreting such phenomena, although there is always the possibility that the choice is merely *contingent* and becomes habitual through the *stratification* of the discourse produced by *any one person* (compare (6.1); here, this means that a term has been invented on a less than premeditated basis and is used simply for the sake of consistency across documents or as a feature of a personal style). This much may be said for the c*ognitive interest* (our preferred term) of an individual.

However, *cognitive interests* as in (Example 7.1) are more typically seen to pertain to a discipline – seen as context – and thereby give rise to phenomena like those observed in (6.2.1) with regard to the treatment of a *topic*. Thus, such *cognitive interests* may undergo change over time (6.2.2); yet they need always be considered as situated in a social context (culture, sub-culture, and sub-sub-culture), which thus becomes an inextricable constant. Of course, the wider social context is itself subject to change. As a consequence, *topics* could be seen as relative to both time and context, which may give rise to *heterarchical* systems and certainly *heterarchical* models thereof.

7.1.1 Thought experiment on agendas

In some sense, the application of the term *cognitive interest* to collectives (especially imagined ones) is a misnomer; the term *agenda*, as used in the context of philosophy and likely elsewhere, would be a more appropriate designation as disciplines as collective abstractions are incapable of "cognition" proper. A philosophical *agenda* is:

> The set of questions that a philosopher aims to tackle [...] Defining this agenda is strongly related to the kind of philosophy that is going to be undertaken. Thus, the agenda is a highly controversial topic in philosophy. This is an exceptional case in the landscape of intellectual disciplines. Most disciplines know clearly what their aims are, i.e. what they would like to see achieved. We can illustrate this situation with three examples in the recent history of philosophy [...] Logical positivism tried to reduce the agenda of philosophy to nil; analytical philosophy reduced it to the study of language; and deconstructionism reduced it to the study of literature.
> Vidal, 2007

Given the situation that "translators, interpreters, indexers, language planners, subject specialists, standardizers of nuts and bolts and rail gauges, localizers, ontologists, artificial intelligence experts, discourse analysts" (Antia et. al, (1)) have different ideas of the *agenda* of *terminology research*, it may well be because each individual has their own *cognitive interest*, which is under the influence of their experiential context.

If this context in turn comprises a wide variety of *cognitive interests*, lead like-minded individuals may again re-associate and formulate their own *agenda* on an ad-hoc basis in the absence of any other they can recognize.

In *terminology research* as in systemics, detecting a visible agenda based on *topic* is difficult: "the language and ipso facto the specialized jargon belong to everybody", (Wijnands, (4)), and the *topics* to be treated are anywhere as multiplex as the principles that might organize them.

An incompatibility of agendas, on the other hand, may lead to *stereotypes* such as "positivism" and "interpretivism" (1.2) which may be studied in their own right (2) but give very little indication of how the underlying *agenda* is to be imagined.

The following though experiment attempts to construct an idealized dichotomy which is operational as a heuristic device, and which will subsequently be refined by the inclusion of the appropriate level of social/ procedural detail that a complete model of *disciplinarity* should possess.

We begin again with the discipline of *terminology research* itself, which we imagine as it would be if it were a "pure" natural science or humanistic discipline, characterized in either case by a *stereotypical agenda* which need neither exist nor be strictly possible.

We contrast this with our own *cognitive interest* (*philosophical terminography* as of yet has no *agenda*, but shares some interests with the different conceptions of *terminology research* – theoretical and applied – as well as with the philosophy of information in the broadest sense).

Since we have stated that we see *terminology research* as an applied philosophy of information, especially in the vein of the systemic tradition, one may look at it through the *stereotype* of the cybernetics *agenda*:

> If we view Man as an actor whose internal thought processes can't be investigated, then we are called 'behavioral psychologists', and we study human behavior. If we view Man as a brain, as a piece of hardware built out of neurons, then we are called 'biologists', and we study neuro-physiological responses. *If we view Man as a machine, as an automaton, then we are called 'cyberneticists', and we investigate mathematical properties of feedback networks of simple components. If we adopt the view of Man as 'processer of symbols', then we are working in the field of Artificial Intelligence.* No one view of Man is 'right' or 'wrong'; each is adopted because from it we can build a model, which in turn has some practical consequences and uses.
> Lenat, cited in Pavel, 1993, my emphasis

Using some insights from the field, we have in Chapters (4) and (5) indeed constructed a model of a simple feedback network, if not necessarily a mathematical one: radical constructivism as a second-order cybernetics largely relies on natural language.

However, it does not follow from this that we regard human beings as automata. Even if *machine* as a technical term is general enough to be extended to human beings or organism in general, its usage in the respective contexts suggests a referent quite different from the everyday idea of "machine" and which can be more aptly paraphrased with the term *system*[5].

The focus here is simply on model-building itself, which is also implicit in cognitive science and/ or under the cognitivist paradigm of information processing (Riegler, (5.4.1)) that needs not be restated.

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[5]Two senses of *machine* as defined in the ASC Glossary (2013) are, for example:

1. a state-determined system; any system showing behavior such that the specification of a state determines the subsequent state; a set of states closed under a mapping. (Ashby, Handout, l96l)

2. a unity in the physical space, defined by its organization, which connotes a non-animistic outlook, and whose dynamisms are apparent. (Maturana and Varela, 1979)

Insofar as these ideas help construct *understanding* (1.4.3), they are more or less useful; yet here, our main interest is in *understanding* itself, which is a philosophical and thus an essentially human concern on the level of *worldview construction* (4.2.1):

> The various sciences each give us fragments, based on empirical work [...] But do the fragments tend to fit together neatly, or are there mismatches and tensions between them? The philosopher patrols the relationships between adjacent sciences, occasionally climbing into a helicopter to get a synoptic view of how all the pieces fit together.
> Godfrey-Smith, 2003, p. 153

The aim of discourse production (4.2.2), on the other hand, simply recurses to those models in order to construct the cognitive artifacts themselves – and information by interacting with them. For this reason, our interest occupies some rather difficult middle-ground between the *agendas* of *instrumental reason* ("pure natural science") and *phenomenology* ("pure human science") to be inducted by way of a thought experiment.

7.1.1.1 Terminology as natural science

First we will try to establish the *agenda* that *terminology research* would need to possess if it were – at least in an English-speaking context – to be defined as one of the "natural sciences"; the following is largely based on L. von Bertalanffy's (1968, 242 ff.) observations. It is too superficial a statement to make about the classical natural or "hard" sciences that their *topic* is establishing "truth about the material world" (3.3); the interesting question with regard to their *agenda* is *how* this is supposed to happen.

At the simplest, natural sciences can be characterized as *nomothetic*, i.e. concerned with "the elaboration of facts and generalities", especially if they help to establish "laws, based on the fact that events in nature are repeatable and recurrent"; this can also be said of the social sciences to some degree, but probably only insofar as this is their explicit motivation (Bertalanffy, 1968a, 195 and 198). We further assume that the description of lawful behavior does not take place in a vacuum, but serves some interest that is more general than the context in which it takes place and therefore belongs to the sphere of general social interest.

This would be the cornerstone of our fictitious *agenda*. However, there must be also another aspect, related to perspective rather than interest. Bertalanffy found that the perspective of natural science (especially Physics, which is again seen as *prototypical*) was characterized by the tendency of *de-anthropomorphization* ("It is an essential characteristic of science that it [...] progressively eliminates those traits which are due to specifically human experience. ", ibid.). It entails:

1. "the invention of artificial sense-organs and the replacement of the human observer by the recording instrument" (p. 245), and the

2. "replacement of direct experience by a self-running algorithmic system" (p. 244).

This first aspect should be well-known, as it can be read as the emergence and improvement of instruments that essentially function along the lines of the microscope or telescope and the associated analogies of microscopy and macroscopy (Tymoczko, 2002, p. 10, Budin, 1996b, pp. 34/35)

which allow human observers to perceive objects larger or smaller than their perceptive threshold (in Bertalanffy's terminology, the "ambient", comparable to the *experiential field*, see note on page 128).

By way of consequence, *de-anthropomorphization* essentially entails a fusion or mutual interdependence of natural science and the "sciences of the artificial" (5.4.2.4), as the latter utilize *nomothetic* insight to extend the perceptive threshold further.

The second aspect is perhaps best interpreted by the replacement of natural language with a mathematical formal symbolic system that allows inferences beyond the immediate experimental reading once a data set had been translated into that symbolic system (ibid, 244). This is effected by way of manipulating data according to the intrinsic, tautological rules of the system.

However, Bertanlanffy – who was also an adherent of the *Whorfian hypothesis* (7) – makes it clear that:

> Conceptualization is culture-bound because it depends on the symbolic systems we apply. These symbolic systems are largely determined by linguistic factors, the structure of the language applied. *Technical language, including the symbolism of mathematics, is, in the last resort, an efflorescence of everyday language, and so will not be independent of the structure of the latter.* [... W]hich aspects or perspectives are mathematized depends on the cultural context. *It is perfectly possible that different individuals and cultures have different predilections for choosing certain aspects and neglecting others.*
> Bertalanffy, 1968b, 237, my emphasis

The argument is slightly unusual given that natural scientists are stereotypically expected to hold *correspondence theories of truth* ((3.3); Pigliucci, 2013), but it does not preclude that hypotheses on language, meaning/ concepts and culture can be tested in a *nomothetic* and instrument-mediated way.

One example would be the use of brain imaging techniques (fMRI) to study cultural differences. Here, instruments are used to produce readings that have to be interpreted, at the very least in terms of an existing special language and general language, and therefore in terms of human cognitive categories, which enter the picture at the latest at the evaluation stage, but probably earlier, at the design of the experiment (3.5):

> While such neuroscience findings are great headline fodder, the field must move forward with rigor and caution, says Stanford University's Markus [...] It's not enough, [... to] simply to scan the brains of people from different "*cultures*" – **defined by** *language*, *nationality* or *ethnicity* – and make assumptions about *cognitive* or *perceptual differences*. By themselves, these are **meaningless categories**[.]
> Azar, 2010, my emphasis

These phenomena apparently cannot be fully *de-anthropomorphized*. However, instrumentation is not only a source of philosophical paradox but also for term formation phenomena *themselves*.

An example for the impact of instrument-mediated perceptions on terminology is the study by Mishlanova and Trofimova (2012) which investigates the disparity of English and Russian histological terminology in terms of structural metaphor.

The researchers found that the diverging metaphorical imagery used by the specialists could be explained in parallel to their different instrumentation, with light microscopes and electron microscopes having been used by the respective groups under comparison. It appeared that the differing visual imagery inspired the formation of diverging terms. It is noteworthy that the

study presents a case of bilingual comparison of metaphoric systems, a direction which Rita Temmermann imagined future research in sociocognitive terminology to take (2000, p. 235). However, in terms of thought experiment, we note that this form of *terminology research* is a form of science study, but not itself a natural science.

This would require adopting the *nomothetic* outlook and the principle of *de-anthropomorphization* both with regard to observation and language, and perhaps doing so in a more radical fashion than hitherto practiced[6].

It would mean a quantitative study of terms as *types* and *tokens* in terms of their frequency in corpora (Pearson and Bowker, 2002, p. 233), which is a possible form of research (e.g. Ahmad, 2008) or the study of "quantitative patterns of terminological growth" (Kageura, 2002, 163 ff.), however *totally devoid of to human interpretation*, as some think would think desirable:

> [I]nformation is not a matter of simple three- and four-dimensional taxonomy and order but of dimensionally agnostic statistics. It calls for an entirely different approach, one that requires us to lose the tether of data as something that can be visualized in its totality [...] *This is a world where massive amounts of data and applied mathematics replace every other tool that might be brought to bear. Out with every theory of human behavior, from linguistics to sociology. Forget taxonomy, ontology, and psychology. Who knows why people do what they do? The point is they do it, and we can track and measure it with unprecedented fidelity. With enough data, the numbers speak for themselves.*
>
> Anderson, 2008, my emphasis

An imaginary form of *terminology research* that works on this principle would still be open to criticism arguing that how one looks at the numbers or what one chooses to measure is still under the influence natural language and culture, but the point would by then be quite possibly moot – what is central here is that an *agenda* like the one projected here would normally follow extrinsic motivations different from the best representation of truth, as has been previously suggested.

A term for the description of the technological and scientific agenda as a not quite self-serving purpose – and one that is sometimes stereotypically used – is the phrase *instrumental reason* (7.1.2); *Russo, 1998*). Beyond the epistemic, it captures a range of ethical and social concerns associated with the expansion of technology; as Floridi (2004) notes, "The impact of ICT [information and communication technology] on contemporary society has caused new and largely unanticipated problems".

Especially with regard gathering and evaluating data on the frequency of occurrence of certain lexical items without human supervision, the most likely application of such an approach of radical quantification would be surveillance or some other military application (compare 6.2.2.2.3), as "information-gathering services can be applied to scholarship or surveillance" (Russo, 1998); the most relevant concrete area of application with a surveillance bent is *information extraction*, which to some extent overlaps corpus-driven terminology research[7].

The purest expression of this form of *agenda* is what Latour (1987) attempted to describe with the term *technoscience*, which tries to fuse the properties of industrial, military and political expediency and institutionalized *cognitive interest*. As a positive definition could not be extracted,

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[6]This is a thought experiment, after all.

[7]"Typical applications of IE [information extraction, PBN] systems are in *gleaning business, government, or military intelligence from a large number of sources*; in searches of the World Wide Web for more specific information than keywords can discriminate; for scientific literature searches; in building databases from large textual corpora ; and in the curation of biomedical articles", Hobbs and Riloff, 2010, 511, my emphasis.

we state this provisional one constructed from co-texts that describe the term *technoscience*:

> [technoscience consists of] heterogeneous components, including the social ones[.]
> (p. 62) [It therefore has a] settled or an unsettled part (p. 99), [an] inside [and an]
> outside (p. 156) [... It involves] scientists and engineers (p. 97) [,] laboratories (p.
> 158). [Latour believes that h]alf of technoscience is an American business (p. 167)
> [and] a military affair (171) [or part of a] war machine (172) [but] not be limited to
> the development of weapon systems (p. 172) [rather, its concern is the] mobilization
> of resources (p. 172) [such as] aircraft and transport, space, electronics, energy
> and, of course, communications (ibid.). [T]echnoscience is made in relatively new,
> rare (p. 179) [because associated with] expensive and fragile places that garner
> disproportionate amounts of resources; these places may come to occupy strategic
> positions and be related with one another (p. 179). [T]echnoscience [is] a network
> (p. 180) [and] science and technology [are] only a subset of technoscience (p. 259)

The picture that emerges here cannot exactly be considered flattering. By further extending the "Physics" analogy, one might imagine the techno-pessimistic conclusion with regard to this *agenda*: "At the point when atomic energy had been harnessed, it was bound to be used for a bomb. [...] Technique never observes the distinction between moral and immoral use", Russo, 1998.

7.1.1.2 Terminology as human science

On the other end of this rather paranoid scenario, *terminology research* could be imagined in terms of an agenda that is purely *humanistic*. Its induction by thought experiment is somewhat more difficult.

Contrasted with the so-called *technosciences*, *human sciences* can be seen as *idiographic* in their tendency, i.e. concerned with "the description of events which have occurred in a near or distant past", Bertalanffy, 1968a, p. 198. As events of this kind (i.e. *contingencies*) cannot be seen to be generally rule-governed, lawful or deterministic or are at least not perceived this way (6.1.2), this might explain why the facts – read: the artifacts, in the literal sense of texts – "of the natural sciences appear as more of a given to any observer than those of the human sciences [Ger. *Geisteswissenschaften*] would", Jahr, cited in Möhn, 1998, 152, my translation.

Apart from this attribute of their perspective, a positive characterization of what constitutes the *human sciences* (and therefore their *agenda*) appears to be as complicated to construct as any listing of the particular disciplines that this *umbrella category* actually spans (6.2.1); this is further aggravated by the observation that the distinction between what is to be seen as a *human science* or humanities subject and what is to be seen as a social science in terms of *topic* seems to be a matter of semantic nuance, sometimes as fine as the distinction "between 'society' versus 'culture' [... which does] not bear on the opposition [...] because both concepts are widely acknowledged in the social sciences and the humanities alike", Beaugrande 1993, § 1.2.2.

WordNet (2010, my emphasis) defines the humanities *negatively* as: "studies intended to provide general knowledge and intellectual skills (*rather than occupational or professional skills*)". This may or may not reflect the popular construction of the category in *opposition* to natural and/ or engineering science. However, a reiteration of the problem of "fuzzy categories", stated by Rita Temmerman (1.1.1) should not be necessary at this point.

In terms of our thought experiment, there remains the problem of inducing the *agenda* associated with this family of subjects, both in axiological and purposive terms. Why would anybody

want to train intellectual facilities without any instrumental objective? And by what means is this training to be effected?

In approaching this problem, we need to engage in *idiography* ourselves; this could now be seen as the appropriate term to describe the derivation of especially the *temporal* aspects of *declarative disciplinarity* (6.2.2).

From this perspective, one may trace the bifurcation of *agendas* back to the "*trivium*" (Lat. "threefold") of historical "grammar, rhetoric, and dialectic" and the "*quadrivium*" (Lat. "fourfold") comprising "arithmetic, music, geometry, astronomy" in medieval times (Kalverkämper, 1998c, 68, my translation). The latter canon of subjects may ultimately be seen as precursors of the natural sciences, by way of "natural philosophy" (Routledge Contributors, 2000, pp. 613/614 and (6.2.2.1)). The former, on the other hand, could be taken as one possible ancestor of the contemporary humanities, albeit with much less internal complexity.

Given the explanations of Teubert with regard to conservation of texts in classical languages (1.4.3), this is where historical philology would fit. Given the shallow classification of subjects, however, it likely didn't differentiate between specialty theories of translation, glossary creation, text interpretation or philosophical critique (all which fell under the historical understanding of the *trivium* – grammar, rhetoric, dialectic) but likely saw them as unified (compare, e.g. Salama-Carr, 2006). This would also have been the case for larger specialties, e.g. philosophy and theology.

That within the context of a specific tradition one possible conception of *human sciences* may have grown from these historical precursors can be seen as suggested by the still-extant synonym "liberal arts" (Wordnet Contributors, 2010, humanities). It is a likely calque from (Lat.) *artes liberales*, or (Ger.) *"Freie Künste"* (Kalverkämper, 1998c, 68, my translation).

The limits of this *idiographic* approach become apparent in two respects; for one, it is likely as riddled with the *contingencies* of the construction of recorded history[8] as the study of impressionistic contemporary discourse examples is with personal idiosyncrasies (7.1); and secondly, the study of historical records is by practical necessity bound to a particular regional cultural tradition, which should make the study of fields that transcend particular traditions through e.g. translations or the use of a *lingua franca*, like e.g. medieval Latin or modern English (House, 2003) so complex that it defeats the use of this perspective as a simplifying heuristic device (6.3) for inducing any *agenda*, safe *auras* of those that the respective cultures may have impressed on the many parallel and/ or intersecting specific traditions of humanities or liberal arts. This is itself not an unproblematic notion as it already recurses to a particular tradition, as will be seen (7.2).

This stated, our point of reference will be the German-language line of *Geisteswissenschaften*, which can be seen to intersect the English-language tradition as the existence of the loan term (En.) *geisteswissenschaften* suggests.

Pfeiffer (1994, my emphasis) relates that the concept of (Ger.) *Geisteswissenschaften* (Eng. *geisteswissenschaften*) has been attributed to W. Dilthey, who tried to forge "a theoretically consistent general concept ("Geisteswissenschaften") [...] to *unify an incongruous array of disciplines* [... that] have grown out, in variously rudimentary or elaborate forms, from the "practice

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[8]"[T]he historical dimension cannot be ignored [... however] our knowledge of the past depends on our own always debatable valuation of the no less debatable surviving testimonies of a more or less randomly selected number of observers... among those who did not ended [sic!, PBN] up in total historical oblivion", François, 2002.

of life"[.]". Here, we can discern the first indication of a possible *agenda*. Its initial rationale is largely seen in the socio-economic, institutional and intellectual climate of 19th century Germany (ibid.), a development trajectory that must appear similar to that which had furthered the emergence of *Handelslinguistik* (2.1). However, the outcome of the process seems to have been a different one:

> Dilthey [...] was torn between demands of *practical utility*, *scientific pressure*, the pathos of life [...] and the multifariousness of cultures. *The modern state demanded utility*; Dilthey tried to provide it, claiming [...] that, through the Geisteswissenschaften, the politician, the lawyer, the theologian, the teacher were put into a better position to locate their specialized concerns "in the comprehensive reality of human society"[.]
> ibid., my emphasis

It would appear that "the congeries of heterogeneous disciplines (from physiology to empirical psychology, to its speculative variants, and so on), in which the practical, the scientific, and the vaguely speculative have joined in an uneasy alliance" (ibid.) apparently only found unity in their perceived *difference* from natural sciences, engineering and professional concerns, which is both reflected in WordNet's definition above and – in a significantly more explicit way – in the following, more specialized definition of *geisteswissenschaften*:

> **Geisteswissenschaften** A generic term used to cover the human sciences, it is *usually associated with a particular view of human sciences as disciplines employing methods radically distinct from those of the natural sciences*, particularly as they involve an *understanding of human beings*.
> Abercrombie, Hill, and Turner, 2006, geisteswissenschaften

That the idea of *understanding* as it follows from text interpretation is a difficult concept (1.4.3) depending on the case-based operationalization of *maker's knowledge* (4.1.1) needs not be restated in detail. However, what might Dilthey's *agenda* have consisted in? A look at his definition of the superordinate term *science* and therefore his understanding of *scientificity* might give an indication of the intended purpose of *geisteswissenschaften*:

> By "science" linguistic usage understands a *sum total of propositions* whose elements are *concepts*, that is, *fully defined, univocal, and universally valid throughout the cognitive system*; *whose connecting links have an established basis*; whose parts, finally, are *bound together as a unit of communication*, either because one can *conceptualize a constituent element of reality* in its totality through this *chain of propositions* or because one can *regulate a branch of human activity by it*. Under the expression "science", then, we are designating *every embodiment of intellectual data* in which we find the characteristic notes just listed and to which as a result the name of science is generally applied.
> Dilthey, 1988, 78, my emphasis

In terms of an operational *agenda*, we might infer that this definition implies that the aim of *geisteswissenschaften* is for good measure a *formulative* one: as an object, we could supply almost any phenomenon, insofar as the propositions can be produced linguistically and the concepts defined in a *coherent* manner. Both goals presuppose linguistic description, or *a specific form of phenomenology*. This can be seen as an indication that *coherentism* ("*sum of proposition*", "*universally valid throughout the cognitive system*", "*connecting links*", "*chain of propositions*") (3.3.3) is used as the basis of *scientificity* in this conception of the human sciences.

Secondly, we find the element of practical control, likely related to the claims that Pfeiffer identified as appeals to utility. In this respect, the (German-language) *Geisteswissenschaften* idea shows an uncanny resemblance to the contemporary (US) idea of systemics as a management-oriented social science (6.2.2.2.3) and, as noted, to the historical origins of *Terminologielehre* (2.1).

Approaching it from an equally critical (i.e. fully symmetrical) axiological perspective, one cannot escape the conclusion that the purpose of *geisteswissenschaften* vis-a-vis the pessimistic conception of *technoscience* is merely to produce the "human capital" for the academic-military-industrial complex, as opposed to its non-human infrastructure. This reiteration of the thought experiment reduces *ad absurdum* the lament that what was "prized in its own right now becomes worthwhile only if it helps achieve something else" (Russo, 1998) with regard to culture as the *topic* of the human sciences, and thereby only breaches the surface of the body of criticism targeted against the "scholastic blindness" of this conception[9] (Bourdieu, 2000).

7.1.2 Between phenomenology and instrumental reason

The point of the above, twofold thought experiment was not malign the entirety of organized academia as the pawn of "dark forces", but to emphatically *simulate* – perhaps at a gross level of deliberate exaggeration – the probable motivations of debates in the literature when they become pointed and resort to polemical arguments along the lines pointed out in the preceding sections.

Examples for this would be Wolfram Wilss' denunciation of the proponents of the Whorfian hypothesis as being "on the surest road to a reactionary racist ideology" (documented in Gentzler, 2001, p. 61) and Derrida's warning of the "totalitarian arrogance" and the "tyranny" of "logocentrism" which "can only be sustained by the evil of repression", as it is mobilized against the dogmatic rationalism of "traditional terminology" by Temmerman (2000, p. 55).

Von Glasersfeld's frequent attacks on realist metaphysics and traditional philosophy or psychology are a common feature of the vast majority of texts authored by this philosopher, so that we need only refer to the main bibliography as a source of examples; a specific debate on the supposed axiological implications of (especially *naturalist*) radical constructivism in literary studies can be found in Gehrke 1994 and Schmidt 1996. Both texts should be read contrastively and will be sampled as case study under (8.2).

The point of using this *heuristic* in the first place is that where conflicts are sharpened to the point of polemic, the underlying *agenda* can be drawn to the surface more easily in the construction of information from the respective fragments. Furthermore, the level of acerbity in the debate itself can be seen as a measure of both the *conventions* and the identity of the context that produced it, and therefore as part of the *procedural* or social aspect that our model of *disciplinarity* needs yet to account for. Two obvious dimensions in this regard are *register convention*

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[9]Defending his own idea of "habitus" against traditionalist "scholastic" conceptions in the social sciences, Bourdieu points out the vicious circle in – presumably – *paradigmatic analyses* based on the *coherentist* or *foundationalist* conception of *scientificity*: "[T]he errors that are pushed aside [...] have to be recalled at each stage in the analysis, come in pairs [...] and [...] the opposing theses, which have to be rejected, are always [...] resurrected by polemical interests, because they correspond to opposing positions in the scientific field and in social space [...] haunted by a long theoretical tradition permanently supported and reactivated by the scholastic situation, which is perpetuated through a blend of reinvention and repetition", ibid, p. 137. As our *cognitive interest* is developing a *heuristic* for terminology description and subject delimitation in the human sciences, our own discussion of "scholasticism" (as well as our use of *embodiment*) follows a different, descriptive interpretation (8.3).

and *connotation*, which need to be seen in a holistic context and as mutually constitutive. With regard to the former, empirical research suggests that:

> [W]riters in different disciplines share strategies for presenting knowledge claims differentially. [P]oints of difference [...] exist between the empirical papers, that is, those which present new experimental data [...] and the non-empirical ones [...]. *Broadly speaking, in the non-empirical articles, language is used which appeals more overtly to shared attitudes and values than is common in the empirical articles.*
> Hunston 1993, 123/124, my emphasis

Insofar as one does not espouse the *cognitive interest* of describing texts *exhaustively* but to aims to construct information from smaller samples, the "shortcut" from text to term is to shift attention to the connotation of units that occur in *arguments* that make such appeals. This mode of operation is certainly applicable to our *praxeology*:

> During times of conflict the choice of words becomes critical in the ideologically motivated literature. [... There is an] implication of a word or phrase in addition to its literal meaning – the connotation of a word. It has been argued that sentiments can be expressed by using certain particular words to articulate connotative meaning. The use of connotation is quite popular for describing new or different groups people, places and things. Connotation can also be used to identify, isolate and celebrate or denigrate people, places and things.
> Ahmad, 2008, p. 20

Taking a cautious approach to judging the boundary between what constitutes empirical and non-empirical research (1.2.3), we can nevertheless connect both observations with the insight of the though experiment regarding stereotypical *agendas*.

If we take *idiographic* fields of study to be more invested in the construction of *agendas* or ideologies (4.2.1), on the grounds that *agenda* is perhaps the only thing that ensures the *intersubjectivity* (3.5) of the conceptual order that practitioners impose on *stratified* artifacts and which thus becomes central to the cohesion of the – most often – sub-sub-culture, then it is perfectly conceivable that the terms which come to be habitually used in that intersubjective special language variant also acquire *connotations* which help to identify the sub- or sub-sub-culture from which it originated.

This could be taken as a restatement of the insight that the practice of *philosophical terminography* depends on a holistic understanding of adjacent subject fields (which may well be seen as *semantic fields* in the anthropological sense; (5.4.2.5)) and that *meta-schemes* like *scientificity* and *disciplinarity* are involved in building up the *discourse-* and *text-world models* for its practice.

If the meaning intended to be expressed in discourse production differs or should be made to differ from the conventional connotation, then the insertion of a term or *argument* into a new context will create a different *neosemanticisms* (5.3), which is indicative of the possibility that the conflict of *agendas* may be seen as a driving (perhaps "tectonic") force (6.2.1) in the term- and concept formation practices of philosophy and related human sciences disciplines.

The terms that are perhaps most descriptive of the underlying *agendas* might however not themselves be present in the discourse, so that the interpreter or philosophical lexicographer needs to insert the "context" into the respective stretch of language by inserting a term or *argument*.

For example, the description of the agenda of terminology as a fictitious *technoscience* (7.1.1.1) would be captured under the terms *instrumental reason* or *instrumental rationality*, whereby the

speculative *agenda* of the human sciences (7.1.1.2) would be best described by inserting the term *phenomenology* with its *adapted* meaning.

Our comparative use of these not quite commensurable categories deliberately deviates from the conventional meaning associated with either of these terms. As a result of this operation, the newly bipolar category becomes a *heuristic* device. The terms now represent a pair of *topic headings* which connote the gestalt of *agendas* rather than a disjunctive pair of concepts (which would not be warranted by conventional usage).

7.1.2.1 Instrumental reason

At the first glance inconspicuous, the phrase *instrumental rationality* or *instrumental reason* (our preferred term) denotes in philosophy the aspect of "practical rationality" that involves "adopting suitable means to [... one's] ends", Kolodny and Brunero, 2013. *"Instrumentally rational"* can therefore be seen as an attribute to any attempt to identify a problem and formulate a solution to it, be it in a philosophical, scientific or any other context.

Counter-intuitively, the pragmatic connotations of this term appear to be largely negative. This can be seen, e.g. in the following fragment, which originated in a social sciences context:

> A term derived from the work of [Max, PBN] Weber, and much used by members of the Frankfurt School, to signify the use of the technically most efficient and rational means (instrument) to reach a desired end or purpose. *The concept is usually used critically to indicate the harmful consequences of the spread of rationalization, of which instrumental rationality is part.*
> Abercrombie, Hill, and Turner, 2006, instrumental reason, my emphasis

The emphasis on possible harmful consequences was certainly introduced in our thought experiment. The tendency to characterize *technoscience*, as in the above (7.1.1.1), as a combination of the most evolved means with undesirable goals could be seen as a form of critique of *instrumental rationality* which often accompanies the term when it is used to describe an *agenda*. There are too many examples to be discussed here; one might note that authors tend to be more or less articulate in their criticism, see e.g. Russo 1998; Gehrke 1994.

In our case, we need to insert the term into an appropriate context to see how the *agenda* or its critique function in a way that is viable for inducing *procedural disciplinarity*. Unlike the thought experiment, this should not be too far-fetched, lest its explanatory power is jeopardized. With regard to the techniques typically associated with terminology research, *knowledge engineering* (5.4.1) and *language engineering* (5.4.2), it might be worthwhile to present the view of Joseph Weizenbaum, which could be applied to the case of contemporary medical ontologies[10].

Many of the expert systems that are of interest to terminological knowledge engineers (5.4.1) are indeed of a medical nature, whereby a actual *technoscience* background and a communality with information extraction emerges. In terms of examples, we could point to the expert system MYCIN, which demonstrates some capability of diagnosing and treating bacterial infections:

> The program [...] MYCIN (Microbial Infection Therapy Program) [which] was designed to help a user of the program to identify bacteria that may exist in a sample

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[10]This exemplar may be included on the strength of the argument that "medical research practices are much more familiar to the public", (Wynne, 1995, p. 367) than arguments about scientific reasoning at large, including sociological/ philosophical concerns about *instrumental reason*. It might also further awareness of the existence of *knowledge-* and *language engineering* practices in the first place.

of blood, saliva, etc., from the patient. Once one or more bacterium was identified, MYCIN also was able to prescribe therapy. The operational basis of MYCIN was a data base containing facts about bacteria and drugs, and a set of propositions that were obtained by computer scientists from microbial infection therapy experts. These propositions, on the whole, comprise conditional statements, such as 'if the stained culture from a patient shows organisms that are growing in rod-like shapes then the organism may be a bacterium of the family streptococcus, or if the bacteria are growing in clumps then there is a possibility that the bacteria may belong to another family'. There are other propositions that are used by the system to ask its user whether the patient from whom the culture was obtained had been operated upon recently. And, if that is true then the system leads its user to another class of bacteria. Finally, if a bacterium or a set of bacteria is identified, MYCIN 'prescribed' one or more drugs to control or eliminate the bacteria.

   Ahmad, 2007

Even superficial reflection is likely to reveal that the construction of such quasi-autonomous machines is dependent on the kind of insight we have characterized as *nomothetic*: only if phenomena like infection can be observed to follow law-like regularities can they be treated in terms of the system's capabilities. Invariants are modeled as schemata to be processed one decision at a time, drawing on a static repertoire of taxonomic data which is modeled in a way that is analogous to the procedures of generic terminography (5.1).

On the face of it, there is nothing particularly sinister about an expert system that can, with the help of codified process hierarchies and logical taxonomic data (ibid.) semi-autonomously engage in medical treatment; in fact, the sensible view would suggest that such an expert should be categorized as almost unambiguously beneficial.

However, as Weizenbaum pointed out in a context that is not too difficult to translate into a possible critique of medical expert systems, there remains the more subtle problem of the alteration of human perceptions of their bodies and themselves[11] (perhaps a meaningless distinction, (1.1.2)) that results from the progressive automation of formerly exclusively human domains:

> *Even physicians, formerly a culture's very symbol of power, are powerless as they increasingly become mere conduits between their patients and the major drug manufacturers.* [And now might be in the process of being removed from the scene altogether, PBN] Patients, in turn, are more and more merely passive objects on whom cures are wrought and to whom things are done. Their own inner healing resources, their capacities for self-reintegration, whether psychic or physical, are more and more regarded as irrelevant in a medicine that can hardly distinguish a human patient from a manufactured object. The now ascendant biofeedback movement may be the penultimate act in the drama separating man from nature; man no longer even senses himself, his body, directly, but only through pointer readings, flashing lights, and buzzing sounds produced by instruments attached to him as speedometers are attached to automobiles. [...] Science promised man power. But, as so often happens when people are seduced by promises of power, the price exacted in advance and all along the path, and the price actually paid, is *servitude and impotence*. Power is nothing if it is not the power to choose. *Instrumental reason can make decisions, but there is all the difference between deciding and choosing.*

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[11]Insofar as problems like this are endemic to a context, e.g. a specific sub-culture and researchers socialized in them, it can be demonstrated by the example that the human *theory of mind* seems best explained against the problems of simulating intelligence in a machine; while people seem to do successful simulations all the time, attention is only drawn to the capability when its technical implementation "clashes" with reality, so that introspection is activated and the engineering enterprise enters a mode which might be considered "phenomenological" (5.4.1.1).

Weizenbaum, 1976, 250/251, my emphasis

It may well be that the perceptual alterations are lasting and in the long run may enter into the ways in which the problems to be solved by *instrumental reason* are themselves perceived and described. In this case, the perceptions would be expressed, e.g. in a terminology based on underlying conceptual metaphors, as for example Groschler (2008) relates for the case of engineering metaphors in cognitive science. Countless other cases could no doubt be inferred from some of the fragments presented in the context of the present work.

However, the point here is not to critique *instrumental reason* as such, but rather to reflect on it as an *agenda*, insofar as *agendas* can be taken as a measure of *procedural disciplinarity*.

In the final analysis, *instrumental reason* may be necessary as an integral part of human reasoning and cannot be readily labeled as desirable or undesirable in and of itself. The relevant point to make here is to draw attention to the problem of awareness (or the lack thereof) insofar as an *instrumental agenda* is the driver of more specific goals associated with sub-cultures and sub-sub-cultures. For example, a survey of the literature in terminology research suggests that *instrumental reason* may be an *agenda* that is largely unreflected; we may take as *prototypical* the punchline expressed in the title of Ceuster's (2001) article on formal terminology management[12] that "resistance is futile".

Paradoxically, attitudes like this may jeopardize the success of *instrumentally rational agendas* themselves as problem solving capacities may remain beneath their full potential if their motivations remain unproblematized (compare Beaugrande, 1997a, § 97).

For example, we may reflect on the observation that the automatic extraction of terms (5.4.2.3), seen as a part of *formal concept analysis* (1.2.4.1) provides orientation, but does not replace interpretation as the technique is by itself unable to deal with some issues that have been raised the preceding chapters (4), (5), (6) in the context of *philosophical terminography*. We may well count the instances of certain terms, but the burden of deciding whether they provide grounds for, e.g. diagnosing *stereotypes, agendas, heuristics* and *biases*, etc. remains squarely on the human operator, who must also form a viable interpretation of their function in the discourse (*worldview construction*) and formulate it *acceptably* and *appropriately* (discourse production). Both processes are involved in the construction of *maker's knowledge* about the term and its context. This stated, it is in no way precluded that these tasks may involve mechanical sub-processes – which may take on a *nomothetic* aspect by sheer repetitiveness – and which might thus be partially automated. Seen in terms of *regenerative theory construction*, *philosophical terminography* therefore involves *instrumental reason* and something more.

7.1.2.2 Phenomenology

This brings us to the second *agenda*, which might be described as broadly phenomenological, insofar as the study of case-based examples and the *reflective abstraction* (4.1.1) and imposition of regularities (6.1.2.1) involves paying *attention* (1.4.2) to phenomena and their details, especially as they occur in the experience of interaction.

This might be best captured under the umbrella category of practicing *phenomenology*:

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[12]Critique of *instrumental reason* has at least found some limited expression in the context of translation studies (Wilss, 2003; Wilss, 2011)

> Literally, the description or study of appearances. Any description of how things appear, especially if sustained and penetrating, can be called a phenomenology. [... S]pecifically 'phenomenology' refers to a movement starting with Brentano and associated especially with Husserl. This at first emphasized the *description of human experience as directed onto objects* [...] In Husserl the emphasis shifted away from the mere description of experience towards a description of the objects of experience, which he called phenomena. *Phenomena were things which appear.* He saw them in fact as essences which the mind intuited, and the task of phenomenology was to describe them. [...] Husserl thought that studying essences as they were intuited *involved laying aside various preconceptions derived from science; this laying aside was called reduction, epoche, or bracketing the world.*
>
> Lacey, 1996, phenomenology, my emphasis

That this is not the clear "antithesis" of *instrumental reason* should emerge from the example that medical expert systems cannot be designed without a reliable understanding of the *phenomena* of disease and cure. Their observation and *bracketing* must precede the elicitation, formulation, operationalization and hard-coding of successful schemes in which they function, and this may also be the case for the less survival-critical applications of "diagnostic" *schemes* like *philosophical terminography.*

Especially when it comes to "laying aside various preconceptions", the concept of phenomenology has found reception in radical constructivism, where it is interpreted as "the study of experience [... or] a methodical investigation of how human beings might attain knowledge by *examining the world as it appears to them* [...] rather than by reiterating metaphysical assumptions", Glasersfeld, 1999b, my emphasis.

As either of the above *explications* is very general, we might appreciate this metaphorical concretization: "[r]eason can cut a piece out of the flow of experience. If then it reflects upon just this – a "something" made discrete by cuts – it creates the concept of unit. As Husserl (1887) noted, this is also the first step in the generation of "things," if it is followed by *reflections on what lies between the cuts*", Glasersfeld, 1998, my emphasis. This reflection on "what lies between the cuts" is elsewhere contextualized as the description of *reflective abstraction* (Glasersfeld, 1995, pp. 16/17). In retrospect, the construction of a schematic like that elaborated in figure (4.3) can be taken to be based on phenomenological understanding.

Likewise, the specific "cuts" that separate, e.g. the *neosemantic* senses of *retronyms*, definitions and *explications* according to different concept theories, topical and temporal contexts in subject delimitation etc. might be seen as "things" *generated* by the practice of reflecting on distinctions. As the precise "appearance" or phenomenon will be different for every observer – their "white box", so to speak – it is perhaps more appropriate to use the term in the plural and refer to "phenomenologies".

The action of distinguishing objects[13] not only lends them the semblance of "existence" (in Piaget's cognitive terms, "object permanence", Glasersfeld, 1995, pp. 84-87) but may also explain *stratification* (6.1.2.2), the distinction of "cuts" or "layers" of experiential reality (and the near-infinitude of models that are based on planes, layers, etc.) insofar as it is exposed in discourse production.

These layers of someone's experiential world then become simply the by-product of the process

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[13]e.g. dichotomic scales with end-points, taxonomies or stereotypes, the ideal types of scientific reasoning, concrete/ abstract matrices like theoretical and practical activities, dimensions of context like time and space, basic motives like utility and understanding, to name but a few that feature in the present work.

of isolating unitary objects (which can then be denoted by units); insofar as the objects distinguished can be assumed to be never quite the same between persons, reflection on the objects (if they are the result of *maker's knowledge*) or their informative construction may be seen as *idiographic* activity; if greater regularity can be established and formulated in an *intersubjective* (i.e. formal) code, which requires abstracting away more detail, the results could be *presented as nomothetic*, but this is likely more of a question of the unit used than the object distinguished[14].

By the same token, we might distinguish the *process of distinction itself* and reflect on it. By this provision, we have explained the first step towards model-building, where the considerations repeat themselves with regard to process, rather than object. But *why* should we build the model in the first place?

This question can likely only be answered relative to motivation, and therefore to *instrumentally rational* concerns. Ideally, the results of *reflective abstraction* may also *alter* the ends to be achieved, or the means selected, which points to an essentially circular relationship of the two *agendas* considered as *topics*.

If we take the view that *phenomenology* should be practiced without regard for instrumental concerns of any kind, we have operationalized the assumption that follows from the statement that the human sciences should use "methods radically distinct" from the *nomothetic* sciences, which likely translates into a radically different agenda that remains unspecified and is likely inexplicable.

We have also created an *antinomy* (i.e. "a contradiction between two statements that seem equally reasonable", Wordnet Contributors, 2010) in the process because this *does* amounts to the statement of an *instrumental* concern, if only the minimal one that holds that the practice of phenomenology in a human sciences context should be seen as a *self-serving purpose.*

Alternatively, we could adopt a perspective that entails that the understanding of the phenomena of experience is literally and *instrumentally* "useful" for something[15]specific, e.g. "regulating" or managing some domain of activity (Dilthey) by the exercise of improved "general knowledge and intellectual skills", in which case the "radically different" collapses into the figures of rhetoric that characterized the clash of *agendas* at the outset of this evaluation.

In this sense, a strong division between the poles of the continuum between *instrumental reason* and *pure phenomenology* is still spurious, but preferable to a pigeonholing of methods on "folkloristic" grounds that make no reference to *agendas* in the first place (1.2.1) and therefore rely on unreflected *stereotypes.*

This much should have emerged from the above thought experiments and the investigations that followed them.

As for the application of this understanding to the study of cases of intra-topical diversification in terms of *procedural disciplinarity*, one may apply the scale *instrumental reason - phenomenological understanding* in conjunction with the idea of the weak Whorfian hypothesis, extended to categories that are not only acquired together with the "mother tongue" but also with the special languages of disciplinary contexts. If this assumption holds, then contexts can be treated

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[14]This simple example may illustrate the idea: given that any string of characters or term may be used to designate as many concepts as observers have associated with it, the term becomes the unit and the concept stands for the object proper, which remains intransparent to those constructing their own version of the object through interpretation. This is shown in figure (5.1)

[15]A tension which is also present in radical constructivism in the form of the statement "the *function of cognition is adaptive* and serves the organization of the experiential world", (Glasersfeld, 2004, p. 219) and the concept of *viability* (3.3.3). How this is seen as problematic will be discussed in (8.2.1).

as if they were separate cultures.

7.2 Disciplines as cultures

In (1.1.1.1), we have already stated a working definition of culture. This included a division of cultural phenomena along the lines of the *syntagmatic/ paradigmatic* division: *paradigmatically*, culture was to be seen as the sum of coordinated operations (involving *schemes* and *categories*, or, considering these as a unity, *thick concepts*) used for the interpretation of experience which could be thought of as functioning in a heterogeneous context of *contingent* and situated practices that have evolved differently between societies.

Syntagmatically, this was considered to be expressed in a conventionally conditioned system of communication whose structure is expressed in models formulated in natural language. This could be seen as *semantic system* which features other autonomous agents (6), except that the system itself can only be guessed at through the construction of models of the system.

This provisional definition was intended to describe an anthropological understanding of culture versus an alternative one that was based on a humanistic canon or an account of history which can only make reference to a particular tradition, such as that outlined in (7.1.1.2); the same example however revealed that practically, considerations on the scope of a larger culture are likely to end at one such particular point as the network of *contingencies* grows too large to be successfully modeled (6.1.2.1).

The activity of subject delimitation, whether by *procedural disciplinarity* or some other device (e.g. the horizontal or vertical dimensions of special language, (4.2.2.2)) can be seen as an example for the necessity to impose a simple pattern of enormous *experiential complexity*, engendered by *contingency* and *stratification*.

This complexity is to some extent compounded by another underlying circularity: if topical and temporal contexts are to be construed as cultures, one will at some point have to contend with the observation that explications of culture are themselves relative to the context that constructed them. The following details the situation in an LSP translation context:

> Considering culture in (LSP) texts raises many conceptual and methodological questions [...] with respect to the perspectives underlying different concepts of culture [...] *different disciplines (e.g. anthropology, 'cultural science' and intercultural communication) have defined culture in different ways with the legitimate concern that the concept* fits their own discipline's explanatory needs [...] culture itself has several dimensions depending on the individual(s) or groups it relates to and is even considered with reference to just one individual (ideo-culture, cf. Floros 2006). In the translation literature the societal and *community* dimensions of culture have been most prominent. For LSP translation purposes it may be *helpful to be aware of 'scientific communities' sharing certain values and beliefs which may vary interculturally and which can therefore be said to reflect specific 'cultures'.* [...] We [...] assume that the awareness of culture 'necessitates translation' in the sense that *it presupposes another culture to become aware of one's own belonging to a culture.*
> Gerzymisch-Arbogast, 2008, 14, my emphasis

Something which may have been glossed over in the above is that – given different *agendas* and linguistic *categories* – "scientific communities" might themselves diversify into different sub-cultures (sub-disciplines) and sub-sub-cultures (schools); on the account of the latter, we may consider the following fragment, both in terms of terminology and content:

> Though scientific culture is now being more frequently recognized as deeply het-
> erogeneous (see, e.g., Law, 1991c, Pickering, 1992b) there is, at present, no term in
> general usage that adequately captures the *amalgam of places, bodies, voices, skills,
> practices, technical devices, theories, social strategies, and collective work that to-
> gether constitute technoscientific knowledge/practices.* Foucault's *epistemes*; Kuhn's
> *paradigms*, Callon, Law, and Latour's *actor networks*; Hacking's *self-vindicating con-
> stellations*; Fuimura and Star's *standardized packages* and *boundary objects*; and
> Knorr Cetina's *reconfigurations*, each embrace some of the range of possible com-
> ponents but none seems sufficiently all-encompassing (Bijker, Hughes, & Pinch 1987;
> Callon, Law, & Rip, 1986; Foucault, 1970; Fujimura, 1992a; Kuhn, 1962/1970; La-
> tour, 1987; Knorr-Cetina, 1992a). Hence the proposed adoption of Deleuze and
> Guattarie's (1987, p. 90) term *assemblages*, which in their usage is like an *episteme*
> with technologies added but connotes the ad-hoc contingency of a collage in its ca-
> pacity to embrace a wide variety of incompatible components. It also has the virtue
> of connoting active and evolving practices rather than a passive and static structure.
> It implies a constructed robustness without a fully interpreted and agreed-upon the-
> oretical framework while capturing the inherently spatial nature of the practices and
> their relations
>
> Verran-Watson and Turnbull, 1995, 117, my emphasis

Here we see a number of different units and objects created by distinct "phenomenologies" and, as they are attributed to individuals, different *cognitive interests*. The interpreters in this case attempted to synthesize an *explication* for a *retronym* ("assemblage") which can be seen to describe the *phenomenon of disciplinary cultures as contexts*, if one loosens the requirement that these be restricted to *technoscientific* practices, which stems from the author's own *cognitive interest* and is of limited relevance to ours.

Contrasted with the specialized translator's perspective, however, the fragment also reveals a tendency to regard such contexts as "free-standing entities apart from the main texts that present them" (Beaugrande, (1.2.3.2)) and therefore neglects the entire *syntagmatic* dimension of culture.

In order to re-introduce it, we need to amplify on the anthropological understanding of culture which, as an apparent paradox, seems to be precipitated on the notion of *linguistic ethnonational-ism* insofar as – as Gerzymisch-Arbogast mentioned – a plurality of cultures must be presupposed in order distinguish a particular one against it. This idea apparently goes back to Herder, who thereby also devised an unsuccessful conception of "proto-geisteswissenschaften" (Pfeiffer, 1994):

> According to Herder (1968), intellectual production and human subjectivity are
> [...] grounded in and created out of particular linguistic traditions, which constitute
> humankind as a plurality of 'peoples.' [...] Herder claimed that language is not a
> transparent medium of cultural production, but argued that the particular character-
> istics of a linguistic variety or linguistic tradition have a profoundly shaping impact
> on the cultural life of a 'people.' Thus, according to Herder, language necessarily
> mediates cultural traditions not in constituting a neutral means of expressing them
> and conveying them to others, but in the sense of playing a productive role in cultural
> life and leaving an indelible imprint of its particularities on everything it cocreates
> and mediates.
>
> Eisenlohr, 2006, p. 188

Consequently, the difference of cultures was seen as precipitated on the use of different natural languages; anthropological contrastive study requires a difference in phenomena, so this view seems to have found its way into anthropology through "works of speculative history", whose

authors might be considered the forebears of the *geisteswissenschaften* variant of the human sciences we have characterized in the thought experiment. This interpretation can be based on a perceived semantic shift that the term *culture* underwent in their usage:

> The word 'culture' is probably the single most central *concept* in twentieth-century anthropology. It has an especially complex history, of which anthropological usage is only one small part. [. . .] In German [...], the term was used in works of speculative history from the second half of the eighteenth century and, *crucially, started to be used in the plural* in the sense of humanity being divided into a number of *separate, distinct cultures.*
> Barnard and Spencer, 1996a, 206, my emphasis

Based on this assumption, it follows (again in a somewhat circular fashion) that if we consider disciplinary contexts as cultures, based on linguistic criteria, we also have to consider them sub-cultures inside a larger culture comprised of speakers of a specific natural language.

From this perspective, further problems that need to accounted for in a conception of *procedural disciplinarity* follow; for one, assuming that "scientific communities share values and beliefs which may vary interculturally", this variance may not only be expressed at the *paradigmatic* level of their "assemblages" but also recur in the *syntagmatic* communication system, in the guise of culture- (read: language-) bound *conventions* such as *register* (i.e. the "tendency to pattern language behaviour in relation to a particular type of activity, level of formality, etc.", Hatim and Mason, 1990, p. 243). Such conventions may vary not only *within* the general language community conventionally subsumed under *culture*, but also *across* sub-cultures, where we assume *subjects as contexts* to begin at the coarsest level of distinction. Anthropologically speaking, such *conventions* can (and have been) construed, for example, in terms of *taboo.*

Taboo (*Ger. Tabu*, from the same Polynesian expression) is indeed the term used by Möhn (1998) with reference to some German-language *register conventions* pertaining to scientific discourse. Given that the "observation of a taboo has the social consequence of binding a social group together by means of common rituals and sentiments" and that the *taboo* is a (perhaps *the*) "symbol of group membership" (Durkheim, cited in Abercrombie, Hill, and Turner, 2006, taboo) this seems not too inappropriate a way of phrasing it. The concept of *taboo* can facilitate the understanding of phenomena of *acceptability* (3.5) and *appropriateness* (2.5.5.4) as well as that of the emergence of connotations with regard to *taboo-conscious* lexical choice (Hunston, above). However, this might have to be contextualized with the appropriate rituals of discourse production ((4.2.2); (6.2)), an idea whose significance may only unfold if particular cases are evaluated.

All things considered, the *procedural* aspect of *disciplinarity* involves constructing these phenomena in a way that is aware of *contingency* and *stratification* and which thus parallels the attributes to the topical (6.2.1) and temporal dimensions (6.2.2) of *declarative disciplinarity* which emerges from considering *subjects as contexts.*

Given that this involves negotiating considerable social and cognitive *experiential complexity*, it stands to reason to assume that any attempt of doing so will be found to involve *stereotyping* (2). This will now be established on the example of earlier attempts (Galtung, Snow) to this effect.

The following collection and brief characterization of cases will attempt to combine the *declarative* and *procedural* elements of the constructs of *scientificity* and *disciplinarity* with the *prax-*

eology of *philosophical terminography* in the final empirical chapter of the present thesis. Its organization adheres to the order shown in Figure (7.1) insofar as the larger context permits.

8 Testing philosophical terminography

Introduction

This chapter aims to apply the models of the *thick concepts/ meta-schemes* of *philosophical terminography* to three select cases at three different levels of granularity that largely correspond to those set out in Chapter (7). As the final chapter of the present work, the focus will continue to shift between terminological and philosophical cases (interchangeable under the heuristic fiction of a unified field of human sciences) to which the appropriate range of conceptual explanations and practical technique hitherto developed will be applied.

This will provide a showcase and/ or test for the *viability* of *philosophical terminography*, concluding the *de facto* conceptual and empirical work, while the main conclusion will deal with further implications of the findings in terms of *paradigmatic* considerations on the co-existence of concept theories, *syntagmatic* considerations on the pragmatic unit of *philosophical terminography*, and technical considerations on present and future *(meta-)codification* possibilities.

As the main purpose is to link the concepts developed in the thesis to applications, the mesostructure of the document will be employed to a large extent. This symbolizes the development of *discourse-world models* and *text-world models* as well as their use for subject delimitation by *declarative* ((3), (6)) and *procedural* factors (7).

The cases discussed will the following:

1. At first, we will give some consideration to the use of the idea of cultures bounded by natural languages (7.2) by presenting a case study that compares two works to this effect, Galtung's intellectual styles hypothesis and Picht and Lauren's relatively recent survey on the state of the art in terminology research as categorized by geographic area and/ or language community. The aim of this comparison is to find some agreement of these cases with each other and with the idea of *agenda*. This is linked to our gradually developed observations on the phenomenon of *terminology science*. As it operates at the *worldview* level of gestalt-like perceptions, the findings are non-operational, but lead over to the second case:

2. This is another "classic" conjecture, C.P. Snow's musings on the "two cultures". Situated at the *meta-scheme* level of sub-culture (but heterarchically overlapping the modeling level of sub-sub-culture), we set out to link the social and textual/ discursive implications of the conjecture to findings relating to *register, genre, text-type* and other palpable *syntagmatic* factors (e.g. defining strategy) that lead to a hypothesis of distinct *agenda-driven* styles of *meta-codification* and their practical relationship to terminologists' *schemes*, including our design for *philosophical terminography*. This will be underwritten by a critical review of a (German-language) debate that has been reconstructed from the constructivism corpus, a debate between the critical hermeneuticist R. Gehrke and the constructivist literary scholar

S.J. Schmidt. Here, a final addition of *sentiment analysis* will complete the *praxeology*. The discussion will further highlight the multilingual aspect of *philosophical terminology*.

3. Lastly, we will look at some connotative implications of the use of a historical *retronym* ("*scholasticism*") in the context of the emergence of sub-sub-cultures, which has the purpose of constructing the components of a possible *scheme* for deriving *text-world models* that are aware of syntagmatic patterns associated with specific sub-sub-cultures. This will be centered on the reception of the *umbrella category* of "post-modernism" and its relation to the established regularities.

Throughout the entire discussion, we will draw attention to phenomena of *stereotypical* concept formation, which crosses over into the area of *sentiment analysis*, here understood in a phenomenological, concept-analytic sense.

On balance, the exercise in *philosophical terminography* will highlight its position between terminography and textography, which entails the use of *qualitative content-* or *sentiment analysis* techniques:

> Sentiment analysis uses the terminology of a specialist domain [...] in conjunction with a thesaurus of words that are used in articulating sentiment [... The unit of sentiment analysis is the] "affect word" [p. 20; ... Sentiment is defined as] an opinion or view as to what is right or agreeable [p. 27]
> Ahmad, 2008, pp. 20; 27

While contemporary *sentiment-/ content analysis* is normally associated with the large-scale statistical processing of mass media like general purpose or financial news (ibid.), our version will be developed as practical application of *philosophical terminography* in the subject-delimitation and term extraction phase and therefore take place on a strictly microscopic and qualitative scale.

As sentiment dictionaries for philosophical terms do not (yet) exist, we use the already tried-and-tested reference works and thesauri for general language which have been used so far in their stead.

At the end of the discussion, the *heterarchy* of modeling levels and the precarious balance between *heuristic* (6.1.2.1) and *bias* (6.1.2.1) in relation to *cognitive interest* (7.1) will have become apparent, which will bring the experimental part of the thesis to a closure in considerations of its possible further development and some final implications with regard to the unit of *philosophical terminography*.

8.1 Worldview level: culture

An attempt to delimit a disciplinary context at the level of culture (in our conception associated largely with natural languages, but not with nation states or geographic conditions) can be recognized in Galtung's attempt to distinguish "intellectual styles" in academic sub-cultures, most notably sub-sub-cultures in the human and social sciences. This is incongruent with our schema insofar as these *procedural* and *agenda-related* motivations are strictly speaking at the level of *worldview*, which, rather than than being ascribed to the particular individual, is generalized to encompass entire "scientific communities" not as sub-sub-cultures but as part as a larger culture.

8.1.1 The intellectual style conjecture

Perhaps for this reason, Galtung's understates claims made for his observations and relates that the paper is an "essay" merely based on "impressions and intuitions, written down on paper and [...] in memory during many years of travels and stays in various intellectual climates around the world" (1981, p. 817). By this device, the simplification and organization of *contingent* phenomena (6.1.2.1) is justified. He posits four distinct "intellectual styles" which are incongruent with language communities and subdivided into "centres and peripheries":

> The peripheries would [comprise ...] the intellectual activities in the colonial and neo-colonial empires [likely in the case of "saxonic style", PBN]. [... T]he gallic influence [...] covers the whole Latin range of countries [... including] South America [and] to a large extent include Romania. [...] Eastern Europe, including the Soviet Union, can be regarded as under the sway of the teutonic intellectual style, partly because of general cultural influence through centuries, partly because of the influence of a key teutonic thinker: Karl Marx. Finally Japan is its own centre; as in the case of other aspects of Japanese culture, it has no periphery beyond itself.
> ibid, p. 820

In this context, it is noteworthy that the conjecture on cultural intellectual styles is partly based on the use of personal *prototypes* (the *named entity* (6.2.2.2.3) *Karl Marx*), only that the *associative stereotype* in terms of which it is generalized (2.5.5.2) now extends to the theoretical output of scholars situated in a very broad and internally heterogenous family of entirely distinct cultures (1.1.1.1).

Here, we can recognize the interpretation of socio-historical *contingencies* (6.2.1) in order to support the categorization (analogous to categorization as understood on page 100), with all the indeterminacy and *bias* that this entails.

The intellectual styles themselves are characterized as follows, whereby we would make the provision of considering the assessment as indicative of institutionalized preferences in one area or another with regard to intellectual activities rather than strengths or weaknesses in generalizing terms, which would constitute a *social stereotype* or *prejudice* (2.5.1):

	Saxonic	Teutonic	Gallic	Nipponic
Paradigm analysis	weak	strong	strong	weak
Descriptions: Proposition production	very strong	weak	weak	strong
Explanation: Theory formation	weak	very strong	very strong	weak
Commentary on other intellectuals: -paradigms -propositions -theories	strong	strong	strong	very strong

Figure 8.1: Overview of intellectual styles, adapted from Galtung (1981, p. 823).

Interestingly, the very vague categorization comes augmented with a taxonomy of parameters in terms that would express, in our terminology, both aspects of *scientificity* (3) and *disciplinarity* (6)(7) and which can be incorporated in information production (5.5). What Galtung (1981) understands by the aspects enumerated is approximately:

1. **Paradigm analysis**: "looking into the foundations of what one does, of exploring the limitations of one's own intellectual enterprise" (ibid., p. 821); by extension, this would also include an effort to delimit the boundaries of a discipline, or a reflection on its object (i.e. topic) and could therefore be considered a concern with *declarative disciplinarity* in the widest sense.

2. **Proposition production**: Hypotheses produced in accord with the collection and documentation of data, indicative of the prevalence of data-driven (instrumental, (7.1.2.1)) approaches over conceptual (phenomenological, (7.1.2.2)) ones. This can seen as a function of *agenda* (7.1.1) and indirectly a concern related to *procedural disciplinarity* and/ or *procedural scientificity* .

3. **Theory formation**: "Theory-formation is the stringing-together-of-words, with *occasional anchoring* in a data base" (ibid., p. 821, our emphasis), and therefore the overall deductive effort of blending data, hypotheses and results into an overarching explanatory framework, which displays internal *coherence*; this can be seen as concern of *declarative scientificity.*

4. **Commentary on other intellectuals**: how the specialist community deals with differing findings and explanation internally; the influence of organizational culture, structure and hierarchy on this. This dimension relates to *syntagmatic (discourse) analysis* (1.2.3.2), *sentiment analysis* (8) and *stereotypes* and is by and large a concern of *procedural disciplinarity.*

In this regard, the intellectual styles conjecture contains positive criteria that can potentially be assimilated to deeper (and therefore really operational) levels of observation on sub-cultures, sub-sub-cultures and the discourse production of individuals.

It is interesting to note that Galtung sees sociocultural factors ((1.2.1) – in relation to disciplines as contexts rather than labels – (6.2)) to have an impact on intellectual production and priorities: they recur in considerations on the design of the organizational environment (e.g. steep or flat hierarchies), the conventions (2.6) of the wider culture in which intellectual (i.e. specialist) communities operate, and the conventions that emerge from the very fact of socialization driven by the requirement of intellectual specialization (4.2.2.2).

Concerning the case study – due to its *heterarchical* nature, both with regard to the vague level of culture and the more concrete level of sub-culture – the following contrastive remarks on the "Teutonic" and "Saxonic" conceptions of the conduct of dialogues or debates seem to be the most relevant:

1. "[T]he saxonic style fosters and encourages debate and discourse. The general spirit is that intellectuals constitute a team [...] that debate [should be continued] in spite of [...] differences [... and] that pluralism is an overriding value, higher than the values attached to the individually or collectively held systems of belief" (ibid, p. 823/824);

2. "[I]n teutonic [...] intellectual discussions [...] the dispersion or diversity of opinion in one single debate is [...] smaller, the audience [...] more homogeneous, and [...there is] less discrepancy to handle [... whereas if does occur ...] discussants will go [...] for the weakest point [which is] dissect[ed], [...] with considerable agility and talent" (ibid, p. 824/825). This has consequences in terms of how a discrepancy in judgment is construed: "Intersubjectivity between two [...] theoretical constructions [is not required, they] are incomparable

and their adherents celebrate their incomparability by issuing solid certificates to each other to the effect that *the other one is not only wrong, but fundamentally wrong*" (ibid, 835).

This is interesting for our case studies insofar as it may help devising and/ or modifying the "ontological" *meta-scheme* of *disciplinarity* with regard to its predictive and simulating function (4.3): if the conjecture is viable, then the appearance of ideological difference and the resulting use of sentiment-connoted terminology should be more pronounced in the German language sphere, with the clash of agendas (7.1.2) more pronounced or pointed (e.g. (6.2.1.3)).

Galtung also gives consideration to the role of discourse participants' institutional environments and therefore their experiential social reality:

1. About the structure of British or American universities, nothing is said. The attitude of British researchers is circumscribed by "we are all *elites in the British society*, certified craftsmen with some differences in skill but not so much that we cannot relate relatively horizontally to each other" (ibid, p. 836);

2. "In Germany the structure seems by and large to be very pyramidal [...] The steepness of the scientific community structure corresponds well with the steepness of the theory pyramid: the higher the professor is located the deeper or more abstract the fundamental principles on which he is working; the lower he is located the lower the level of propositions until one comes down to students, the *foot soldiers* of research who dirty their hands with empirical matters" (ibid, p. 834)

In terms of the second contention, one may point to a salient problem of the conjecture: like any personal attempt at explaining experience in terms of interpreting *contingencies* (6.1.2.1) using of the *sociological imagination* (2), it appears situated in the interpreter's experiential time and may therefore not be viable in a different day and age (1.3.2). For the argument's sake, we assume that the 32 years-old observation still has repercussions within the *synchronic* slice we are now evaluating .

8.1.2 Reception and interpretation

This seems warranted given that the reception of the idea has been surprisingly broad, albeit apparently limited to German-speaking contexts.

Most of the below seem to be concerned with translating the observation into discourse-world models (especially in regard to controversy) of the use in translation or special language studies, with little consideration to terminology use.

Ehlich (1998), in the context of LSP studies, characterized the attempt negatively as "the production of prejudice" in an academic guise. He admits however that differences between particular languages for special purposes in the human sciences are still lacking systematic, social, cognitive and historical criteria for inter-linguistic comparison.

This is also noted by Gläser (1998) for the same field, however, textual criteria are here derived from the basic notion of intellectual style. They relate to macrostructural considerations (*text-world model*, (4.2.2.1)) as the organization of the text in terms of a hierarchy of topics and considerations on their linearity vs. digressiveness across intellectual styles. Gläser notes that

characteristics of the German-language registers also infuse English-language texts, insofar as they are authored by native speaker of German.

Kalverkämper (1998c) notes that preparedness for making strong and controversial statements may vary between cultures. The difference as reflected in register conventions is recognized in 1998.

Again with regard to controversy, mostly in a translation context, differences with regard to hedging are noted by several authors (Wilss, 1996, pp. 120/121, Gläser, 1998). The receptions by and large seem to reflect either the *agendas* of disciplines dealing with cultural diversity or the anxieties of those situated within philological disciplines, which however emerges more clearly in the reception of the "two cultures" conjecture (8.2) on part of the same community.

There are however two observations that are potentially of interest to the interpretative side of *philosophical terminography*. The first concerns term-formation patterns in the human sciences from a contrastive point of view:

1. Based on Galtung's hypothesis (and Clyne's refinement thereof), Nagel (1999, 76/77, my translation) noted that with regard to the terminology of linguistics that "the socio-cultural heritage might explain why English-speaking linguists are satisfied with distinguishing *language* and *speech* and feel no desire to create an artificial distinction between the **meta-linguage-related* and **meta-languicity*, while their German-speaking counterparts seem to be driven to constantly construct new terminological dichotomies [...] While the German-language scientific discourse may appear more complex than its English-language counterpart [...] the blame for this must be allocated not so much to its participants but rather to the general paradigms in terms of which it functions". These observations can be seen as indicative of the creation of *retronyms* in *secondary term formation*, a phenomenon we have already observed under (2.3.4) and which should have an interesting effect if it occurs in the coining of discipline labels.

2. The second observation is relevant to text interpretation and the general relationship between *worldview construction* and discourse production (4.1). In a translation-related context, Kussmaul (1998, 235, my translation) stated the level-headed interpretation that:

   [Philological] texts written in English are, perhaps on account of their inductive approach and the better manageability of their [proposition-oriented] "small pyramids" more reader-oriented, the author is seen as responsible for their comprehensibility. German texts, perhaps on account of their more deductive nature and theoretical interest, are more likely written "for the author"; readers themselves must make the effort to understand them.

In sum, these observations and receptions can contribute to the *categorization* of texts, their parts ("fragments") and their terms, and therefore help understanding *disciplinarity* at the level of general culture, insofar as this is necessary especially in inter-linguistic comparison and the resolution and interpretation of differences, such as those observed in (6.2.1.2). Furthermore, they add the *syntagmatic* dimension of culture to *procedural disciplinarity*.

If we surmise socio-historical *contingencies* to be more or less lasting phenomena (as precarious as this may appear), we might have a handle on certain phenomena that are *imported* and *borrowed* in the interchange between cultures, sub-cultures and sub-sub-cultures.

However, most of the above are surface phenomena. Might *agendas* themselves differ in the conceptual space of "culture"?

8.1.3 Case example: terminology science

Here we can evaluate a survey on the state of the art of discipline of terminology research with view to traditions that Galtung might characterize as "Saxonic" or "Teutonic".

The following is based on a preparation of Laurén and Picht (2006), a study which is organized by geographic area in the strict sense and without consideration for "center" or "periphery".

Therefore, all of the below numbered points are taken from the survey, put in quotation marks and followed by the respective page number.

The data and the categories were selectively prepared to be aligned in areas that fit Galtung's categorizations the closest. Adjustments must be made for the difference between very specific criteria on the one, and very general ones on the other hand (see definition of *heterarchy*, on page 169).

Galtung's category	Survey category	List
Paradigm analysis	The place of terminology in the light of the philosophy of science	1
Proposition production	Theoretical and methodological aspects of terminology [Subcategory] corpus-based terminology	2
Theory formation	Importance of terminological theory and its development	3
Commentary on others	Attitudes towards the concept of 'Terminological School'	4

Figure 8.2: Alignment of Galtung's speculations and Picht and Lauren's qualitative survey.

The relevant geographical areas used in the survey are "Anglo-saxon area", mapped to "Saxonic intellectual style" and denoted with (a), and "German-speaking area" mapped to "Teutonic intellectual style" and denoted with (b). We may now categorize the observations:

1. **Paradigm analysis**

   a) "The issue in hand receives relatively little attention; however there are exceptions such as Sager, who considers terminology to be a part of linguistics. In the literature it is hard to find definite statements on this subject" (p. 171)

   b) "Research into the relation between terminology and the philosophy of science has attracted much attention, especially in the last two decades, although the philosophical roots and influences can be traced back to the 18th century. Wüster in his article of 1974 defines terminology as a 'frontier zone' (Grenzgebiet) between other sciences and disciplines and thus indicates his position. Oeser (1988 et passim) in particular researched this relation from a philosophical point of view, concluding that terminology is an independent discipline. Budin has continued this line of investigation and added important findings and valuable arguments in favour of Oeser's results." (p. 171)

2. **Proposition production**

a) "Corpus-based terminology is a central subject and receives considerable attention, manifested in active theory development. In the UK, corpora are especially used for investigating the relations between text and terminologies. Furthermore, intensive research into corpora and their applications is dominant in the whole area and a close relationship to knowledge management and to information and documentation is evident." (p. 182)

b) "There exist a number of research results on this issue, especially related to corpus-based terminography and projects to create terminology resources." (p. 182)

3. **Theory formation**

a) "Coherent theory-building is less pronounced but exists, albeit less visibly. Priority is given to different applications of terminology which are quite often based on insufficient theoretical foundations. There is relatively little contact between theory-oriented and application-oriented environments." (p. 167)

b) "Terminological theory and its active development have a long tradition which goes back to the founders of terminology science. In this respect there is great similarity between this area and Russia. Although it has been denied by some scholars that the so-called Vienna School has developed further since the 1970s, it is an easily provable fact that there has been a continuous development combined with a considerable thematic amplification beyond the original research objects and sub-disciplines." (p. 166/167)

4. **Commentary on others**

a) "No claim has been made to represent a 'Terminological School'. If the term is used in the literature, it is used to refer to those who themselves claim to be a 'school'. In any case it is not considered a geographically conditioned concept but rather an 'ideological' one. In addition, since many approaches are interrelated and have contributors not only from the Anglo-Saxon area, it seems to be inappropriate to claim to be a 'school'." (p.169)

b) "The concept of 'Terminological School' was first introduced after Wüster's death. Wüster himself never considered the theory which he developed as a 'school' in contrast to other approaches. The concept was probably introduced by Felber inspired by the Russian and Prague Schools. The concept 'school' does not have any importance today not least because of its rigidity and lack of a satisfactory definition. However, it is still used in the literature, although much more by other approaches than the one based on Wüster and his successors." (p. 169)

We let the statements speak for themselves without further comment.

Somewhat surprisingly, a comparison between the intellectual styles conjecture and the qualitative survey reveals a degree of convergence in most points except the last (*commentary on others*), which might be a matter of interpreting the content of the categories.

As our reasoning suggests, the existence of "schools of thought" or sub-sub-cultures would be a function of "commentary on others" insofar as this commentary can produce consent or dissent,

and the fault-lines of scholastic division would appear to parallel these intersubjective sentiments. Perhaps the lack of awareness here can be seen as unspecified *cognitive bias* (6.1.2.1). In this regard, another aspect of Galtung's conjecture may be activated:

> I have been struck repeatedly by how little awareness the members of one intellectual community seem to have of the peculiarities of their community. *They are often good at characterizing others, but not themselves [.]*
> Galtung, 1981, pp. 817/818

Considering this, it might be explicable why appeals to consent or "language [...] which appeals more overtly to shared attitudes" (i.e. *sentiment*) by using accordingly connoted terminology should be linked to commentary and commentary should be linked to "attitude to the concept of school" as a consequence.

Here, there is some agreement in both the English- and German-language communities that "schools" are mainly what *others* proclaim to differentiate themselves from the (geographically conditioned?) consensus (4a), or that the notion of school is a mere historical figment or *contingency* (4b).

In particular, one might like to amplify that the idea of "school" is rejected because "it lacks a satisfactory definition" and therefore a place in the overarching paradigm (1b) or theoretical edifice (3b). This might be construed as a counter-indication (8.2.2.1) to what is actually being said. Here, we could point to the *affect words* (see *sentiment analysis,* on page 197) used to describe this state of affairs.

It should be clear that at the level of culture/ *worldview*, coherent statements about underlying agendas are all but precluded by the gestalt-like perception of cultural categories (1.1.2).

At best, one might try and interpret the *agendas* of one geographic area – in the *stereotypical frame* of the "Teutonic" intellectual style conjectured by Galtung – as on balance tending toward "phenomenological" explanations (rather than descriptions), which are however dependent on the theoretical framework they are selected to illustrate.

"Aberrant" phenomena are apparently ignored, which is why the endeavor cannot be seen as a self-serving purpose (7.1.1.2), but rather serves an *instrumental agenda* that corresponds to the diagnosed structure of the organizations the theoreticians operate out of; the products of this intellectual style seems to best suited to "regulate a branch of human activity" (Dilthey, 7.1.1.2), in this case the theory-construction endeavor as a social context *itself*.

The production of propositions is not its primary purpose; this would rather appear to be a priority of the "Saxonic" intellectual style, which seems to specialize in producing propositions from observed data and therefore tends to approach experiential phenomena from a technical point of view, appearing to be (paradoxically) more efficient in the utilization of "real life" data precisely because no theoretical precepts need to be honored. Its motivations therefore are most likely extrinsic to theory construction, which might place it on balance in the larger context of *instrumental reason* (7.1.1.1).

Such interpretations are however questionable not only for the obvious reason of making untenably broad generalizations on the basis of very little data. Our observations in terms of *agenda* must seem equally weak, which points to the possible interpretation that models on the *worldview* level are likely non-operational, lacking particular *(meta-)schemes* (4.2.1) that can be expressed in detailed phenomenologies.

What the example illustrates well, on the other hand, is *stereotypical reasoning*, to which Galtung, as noted, readily admits by relativizing his knowledge claim[1].

Specifically, we might characterize the construction of intellectual style as a formulation of a *discourse-specific stereotype* (2.5.5.1) which is however presented without reference to specific texts.

In this regard, we might drop the requirement of the stereotype providing "background knowledge relevant for text interpretation" and contextualize Galtung's contruct as relating *directly* to a "system of norms and values that prevails in a linguistic and cultural community" (Zybatow, ibid.), which, as noted, is a problematic idea.

We also find *image-schematic* and therefore *subject-specific stereotypes* (in this case, the ubiquitous philosophical topic of deduction vs. induction, (2.5.5.2)) associated with the (literal) image of the pyramid, which could be seen to represent organizational and textual structure and therefore to organize the argument of the text (Galtung's). By a readily apprehended analogy, the "large pyramid" stands for a centralized and authoritarian environment and a text which makes an overarching claim which all further sub-arguments are supposed to support.

The inherent criticism here was not lost on Ehlich (1998, 683, my translation) who read it as a portrayal of the "German scientific tradition" as "anti-democratic and incomprehensible" that should prepare the way for a further "Anglicization" of the respective institutions (more of this below). Here, a conflict of agendas is being projected onto the conjecture.

The small pyramids, by contrast, stand for a decentralized and egalitarian form of organization – although this has to be inferred on the basis of the image, in absence of explicitations – and texts which build their overall argument on clusters of data from which argument gradually emerges. Their argument is either not subject to an overall controlling claim, or to a very modest one.

On the concrete level of *term-specific stereotype* (2.5.5.3), we are confronted with *semantic stereotypes* (2.5.5.3) in the form of such phrases as as "the gentleman's agreement", perhaps complementing the *prejudice* (2.5.1) of "snobbery" associated with "the elite of British society", and on the side of the "Teutonic" style, "the foot soldiers of research", corresponding to the prejudicial image of Germans being "militaristic" and "subservient" (compare Ehlich, above).

We thus find expressed "typical properties which help language users differentiate [conceptual] contents against each other in everyday reasoning" (Zybatow, ibid.), whereby this function seems to indicate a differentiation at a very gross level, devoid of particulars, and certainly of experiential correlates. Nevertheless the *stereotype* does seems to provide some protean form of orientation.

To sum up, the construct of intellectual style seems to make some limited contribution to modeling the *procedural* content of the *meta-scheme* of *disciplinarity* if handled with critical distance, and in the operational frame of more specific interpretations and applications, such as Kussmaul's and Nagel's.

Even then, the aspect of intellectual style can only be seen as an additional heuristic criterion for a preliminary declarative subject delimitation. An ostensibly more differentiated, if no less *stereotypical* view of a possible procedural distinction of contexts can be seen to obtain in the case of the two cultures conjecture on the *meta-scheme* level of sub-culture.

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[1]The term *stereotype*, however, does not occur once in the text.

8.2 Meta-scheme level: sub-culture

Due to our *cognitive interest* of modeling the *thick concepts* of *scientificity* and *disciplinarity* as heuristic devices for subject delimitation and term description specifically for the human sciences and mobilizing them for *philosophical terminography*, one might think the inclusion of "the two cultures" conjecture itself misplaced; after all, conventional wisdom suggests there should be no necessity to account for phenomena specific to the natural sciences as construed as the self-evident "antithesis" of this social context.

However, our observations so far should have proven this assumption quite wrong: not only do overlaps occur (especially in philosophy: *naturalism*, 3.3.1), but pathways for the propagation of terms should be seen as open both ways (6.2.2.2.2) in principle.

Therefore, there should be some form of communication between the so-called "hard" and "soft" sciences", but the question remains of whether this communication is to be imagined one-way (as the idea of *import* (3.3.1.1) suggests) or whether there is any form of dialog, either with regard to the sub-cultures of "soft" and "hard" sciences at large, or between specific sub-sub-cultures within the one and the other, which would be more cogent with a reciprocal *inter-domain borrowing* (3.3.1.2). This is certainly an area where the constructs of (*procedural* and *declarative*) *scientificity* and *disciplinarity* seem to overlap.

In relation to our observations on consensus-evoking, connotative terminology use and the (apparent) tension between the *phenomenological description of human experience* and *instrumental reason*, it should follow that *imports* from natural sciences might either evoke consensus or shared dissent and therefore *constitute* the discourse of a given sub-sub-culture in the process of further dissociating from the broader context of the *idiographic* human sciences. As this dissociation creates the sub-sub-culture in terms of *declarative disciplinarity* (6), this is the salient point of interest in this context.

In some sense, the two cultures conjecture by C.P. Snow starts to differentiate where the intellectual styles conjecture leaves off, namely at the point of the discursive constitution of specific academic sub-cultures (here differentiated from the wider speaker community). Galtung (1981, p. 818) remarked in this respect that his "remarks [were] limited to the field of social science. Some may also be valid for other sciences but that would be beyond any grasp [he] might possibly have of their substance". In this generalized form, we find the distinction of the larger non-academic culture and academic culture, whereby the latter is construed as a quasi-closed circuit:

> [T]he intellectual community is to some extent a closed community, feeding on itself in all societies. Many intellectuals receive as their major impressions what other intellectuals do and say. That is the reality to which they react, empirical reality as well as potential reality[.]
> ibid, p. 823

Snow's distinction of two cultures, i.e. a scientific and a literary one, suggests an internal division within these communities, and implies a lack of communication between them, which must however be seen in its larger geographic and socio-historical (i.e. British) as well as temporal (i.e. the late 1950s) context. Also, we need to make adjustments for the very superficial nature of the distinctions made in terms of *agenda*, so that the larger heuristic effects of this idea must – like the intellectual styles conjecture – be measured in terms of its reception in the relevant disciplinary contexts.

8.2.1 The two cultures conjecture

In essence, Snow's observation are ethnographic and holistic (1.4.4) in the sense that they make reference largely to his personal experiences of the attitudes of representatives of the "two cultures" outside the context that strictly constitutes their work. He then extrapolates from these experiences to the wider cultural attitudes towards either "sciences" or "humanities" as social context. The following fragment may exemplify this point:

> The separation between the two cultures has been getting deeper under our eyes; there is now precious little communication between them, little but different kinds of incomprehension and dislike. The traditional culture [... is ...] *mainly literary*, [stands] on its precarious dignity, spending far too much energy on Alexandrine intricacies, occasionally letting fly in fits of aggressive pique quite beyond its means, too much on the defensive to show any generous imagination to the forces which must inevitably reshape it. [... As for the scientific culture, h]ow much of the traditional culture gets through to them? [...] History gets across to a certain extent, in particular social history [...] Philosophy the scientific culture views with indifference, especially metaphysics. [...] They might touch their hats to linguistic analysis, as a relatively honourable way of wasting time; not so to existentialism. [... With regard to the] arts [... the] only one which is cultivated [...] is music [...] the graphic arts (except architecture) score little, and poetry not at all.
> Snow, 1956

Whether scientists care for graphic arts or poetry should not strictly have any bearing on the question (sub-)sub-cultural textual and terminological differentiation, but the question of attitudes towards literature does, at least indirectly insofar as later interpreters have plausibly seized on the idea of attitude towards *narrative* (crucial to the construction of *contingencies*, (6.1.2.1)) as a cognitive instrument which in turn is strongly related to *nomothetic* (7.1.1.1) and *idiographic* (7.1.1.2) *agendas* insofar as the latter are more readily expressed in narrative form than the former (Heylighen, 2009).

Here we can identify a measure of making the two cultures conjecture fit the requirement of helping identify and characterize nomothetically-oriented and traditionalist elements *within* the human sciences rather than (unnecessarily) inducing the differences between natural sciences and human sciences *per se*, which should be reconstructible from the model of *scientificity* (3) and the procedural model of *agenda* (7.1.1.1).

Heylighen specifically observed a division within the human sciences spectrum in terms of their preferred mode of communication along the lines of acceptance or rejection of *narrative discourses* as a means of *worldview construction* (compare (2.5.5.1)) and discourse production and distinguishes particular sub-cultures caught in the tension between *agendas* from those perceived to be aligned with the one or the other *agenda*:

> The disciplines that study human behavior, including psychology, sociology, economics, anthropology, history, and media studies, *tend to be particularly incoherent in their approach, being divided between scientific and narrative perspectives.* With the exception of the more analytic strands of philosophy and linguistics, the humanities have generally opted for a narrative perspective - *as is most obvious in history and literary theory.* Economics and academic psychology like to position themselves squarely into the scientific camp, driven in part by what has been called "physics envy", i.e. the desire for a fully mathematical, deterministic theory based on precise laws of behavior. *However, this desire has been largely frustrated up to now,*

> *as human behavior appears much too complex to be reduced to deterministic models.*
> *Sociology, psychiatry, philosophy and anthropology mix both perspectives, depending*
> *on the problems addressed or the traditions within a particular school of thought.*
>   Heylighen, 2009

Here, we can see another indication for a further distinction in sub-sub-cultural terms. Sub-sub-cultures are likely defined in terms of which particular narratives they like to "tune in" to, i.e. which authors they receive with positive or negative *sentiment*, as expressed by "affect words" or the interpretations of terminological connotation.

This may be seen as the terminological dimension, which however only emerges in the context of specific cases. In terms of the construction of *discourse-world model* and *text-world model* for orientation to a conceptual space (i.e. a *discipline as context*), the following considerations on the constraints of *texture* (3) that follow from these tensions are to discussed in a holistic context, with respect to socio-historical *contingencies* (6.1.2.1) and *conventions* (2.6).

8.2.1.1 Sub-culture and texture

For the understanding of what is to be termed *codification mentality* in the following, it is essential that one returns to Figure (4.3) in Chapter (4), which has been designed from an *onomasiological* and hence *deductive* perspective (1.3.3.1) from the personal *worldview* level downwards (we started from principles there) and look at it from an *inductive*, or semasiological perspective.

Codification mentalities, by contrast, would work upwards from the discursive cognitive artifact to the *scheme* level of *text-world* and *discourse-world model* and therefore bottom-up, which (like the *deductive* perspective) is a heuristic device as experiential information construction is seen to be best understood (and therefore modeled) as working middle-out (1.4.1).

This is best explained in terms of culture as a unity with *syntagmatic* and *paradigmatic* dimensions (1.1.1.1), a property which seems to inherited or conserved in the distinction of deeper levels.

On the textual *syntagmatic* dimension of (sub-)culture, this perspective is operational insofar as it can be connected with the *category* of *text type* ("A text type is a generalization across a set of texts that can be considered similar enough to constitute a recurrent type", Matthiessen, Teruya, and Lam 2010, p. 219). This which could either be seen as *prototype* (1.3) of a *texture* or as *text-specific stereotype* (2.5.5.1), whereas the former has a more cognitive and the latter a more social implication.

Here, "scientific" (i.e. *nomothetic, instrumentally rational*) perspectives have, on the trivial view, their correlate in the *expository text type*, while the more narratively oriented forms of discourse production are situated on the *narrative* spectrum of *text types*. However, the problem here is that narrations are defined as subtypes of exposition, so that *heterarchical* effects need to be taken into account; compare:

> **Exposition**: A text type in which concepts, objects, or events are presented in a non-evaluative manner Hatim and Mason 1990, p. 241

and by contrast:

> **Narration**: An *expository text type*, in which the focus is on situating events *in time* Hatim and Mason 1990, 242, my emphasis

One may see the obvious motivation for the choice of *narrative textures* in the *idiographic* disciplines: per definition, this *agenda* calls for *events* to be *situated in time*.

However, there is another function to be considered. If we take into account that *texture* must provide some form for commentary on others, there is a discontinuity of both *expository* forms with the need to communicate conflicting claims and their *exposition* (8.1.1, § 4), and therefore the dimension of *sentiment* or affect in general.

If it is to be *accommodated*, then we need to add another *text-type focus* to the list, which may overlap with either: the *argumentative text type*, in which "concepts, objects or events" are evaluated (or "a text-type in which concepts and/or beliefs are evaluated", ibid, 237). Logically, exposition precedes evaluation. Rhetorically, it may be hidden in it, or rather be constructed this way.

In practice, the *expository-narrative-argumentative text-type continuum* may be seen as the "default" form of potential *texture* we are likely encounter in the human sciences. Particular instances will likely be experienced as a mixture with more or less strong foci on one or the other function. Their *recognition* can also depend on a viable *situation* (used as verb) or insertion of the text into a topical and temporal matrix (6) constructed from experience, which in turn can only be derived from specific examples.

With regard to the experience of *field as context*, the indeterminate boundaries between *expository/ narrative* and *argumentative text-types* in humanities/ philosophical discourses may be seen as pertaining to the way that the mostly immaterial objects are constructed phenomenologically (7.1.2.2): if one means to establish a new distinction or slice of subjective experiential reality (denoted by a term, (3.5),(5.3)), then all previously made and distinguished "slices" found in the *textual archives* of the sub-culture are to be reordered, or, more often, removed by way of destructive argument (e.g. "special linguistics has no use for the concept of concept", Kretzenbacher, (6.2.1.3)).

This would extend the "place" analogy of *topic* to particular items kept in the place, and practically make the distinction between "exposition" and "argument" meaningless, as suggested.

Therefore, the very exposition of a concept can be seen as an argument waiting to happen, which might explain the preference for forming *retronyms* in contexts similar to the social sciences (5.3). In this sense, below characterization can be read both in terms of "expository procedure" or "argumentative strategy" for the specific case:

Science	*Humanities*
Turning commonsense understandings into technical understandings	Using abstraction to understand and interpret the world
Creating a technical language trough setting up technical terms, arranging those terms taxonomically and then using that framework to explain how the world came to be as it is.	Abstraction involves moving from an instance or collection of instances, through generalisation to abstract interpretation
Move to increasing specificity	Specific to interpretative

Figure 8.3: Mode of exposition and/ or argumentation in terms of the two cultures conjecture, according to Fuller, 2005, p. 47.

As noted, the above need not be interpreted as differentiating literal natural sciences and human sciences, but should be seen as corresponding to the tendency to adopt a scientific/ *nomothetic* or narrative/ *ideographic* outlook largely *irrespective* of *topic* under the impression that obtains in this regard (6.2.1). If we add the "cultural" aspect to the above conceptual and functional characteristics, we might be able to derive a characterization of the *codification* (4.2.2) (with regard to defining conceptual entities and coining terms) or more generally, discourse production (4.2.2) (with regard to the entire texture) *mentality* of the conjectural adherents of the "scientific" or "humanistic" *agendas*.

8.2.1.1.1 Scientific codification mentality

In case of the former, "turning commonsense understanding into technical understandings" can be equated with coining suitable *neologisms* which visibly indicate the shift, propagating them through the appropriate rituals of discourse production and embedding them in *text types* with *expository* focus.

"The creation of a technical language" is practically a function of these texts beginning to form a *semantic system* (5.4.2.5) or *textual archive* (see note on page 144) of the discipline's discourse, and thus a potential constraint on individuals' *discourse-world models*.

The "taxonomy of terms" can be seen as the terminological *concept system* (see definition on page 99, or rather *definition system*) constructed by recurring (and therefore *intersubjective* (3.5)) topical configurations in the texts, which thereby becomes readily abstractible as *text-world model*, a *scheme* for both information construction and discourse production, from which emerges an *meta-scheme* of *scientificity*.

The argumentative structure (in no way absent in the case of texts that seek to explain "how the world has come to be as it is") is internalized to the point where it can be formulated as *ideal type* (1.4), associated with a *prototype* of text producer or "text gestalt" (2.5.5.2), and subsequently emulated.

This process is apparently straightforward, once understood. For the terminological description of units hailing from contexts where such *conventions* prevail, only a minimal *discourse-world model* (one that is viable within the constraints) and only the *declarative* "skeleton" of a *meta-scheme* of *disciplinarity* are strictly necessary in a context other than a discourse production scenario.

The apparent transparency is however owed to the experiential fact that the knowledge articulated in discourses conforming to this *ideal type* is explicitly *maker's knowledge*, whether couched in the rhetoric of discovery or invention, and the (surface) *artificiality* of the terms used is the very feature which facilitates their *recognition* and *re-presentation* in terms of an acquired *scheme* (4).

A prerequisite especially for the construction of the taxonomic system would be a relative strict adherence to a "classical" philosophical or terminological definition pattern inside the text (Hebenstreit, (3.6)). By this feature, term *recognition* (see definition/ discussion, on page 65) and *re-presentation* (see definition/ discussion, on page 65) would also be facilitated: a term is either what needs to be defined (from the discourse producer's perspective) or what has been defined (from the information construction perspective, (4.1.2)).

However, the application of such a mentality may go against the grain of the subject as social context, in a way similar to the way *agendas* encourage or discourage the production

of certain *text-types* or *paradigmatic textures*. *Conventions* on designating may be contingent on such preferences, and further discourse production conventions may spring up around either preference.

Within these limits, strategies of discourse production appear, at first glance, agnostic to *text-types*, insofar as the construction of "technical understanding" can and does take place in expository/narrative-argumentative forms (else there would be no popularizations, the subject of the text from which the table was adopted), while abstraction can, at the other extreme end of the spectrum, take place devoid of narrative intent and take the form of translation into a formal language (7.1.1.1) and consequent visualization (e.g. as *concept* system in the sense of generic terminography (see definition of *concept system in terminology*, on page 99)), or the direct visualization of data (as used in the examples in (6)), enabled by the production of uniform data (2) through the formal system. Such visualizations may, in turn, themselves be embedded in textures and create a specific impression (Latour, (6.1.2.2)) characteristic of a *text-type*.

The integral part is a construction of the expression of a theory from a *coherent* system of definitions (Hebenstreit, (3.6)), with other factors being *contingent* on the *declarative* and *procedural disciplinarity* of the context.

This however does not mean that they can be readily neglected.

Taking disciplinary *conventions* (2.6) into account, we find – perhaps due to the situation that Heylighen above relates – the aforementioned *taboos* (7.2) which pertain to restrictions in *register* (7.2), *genre* (2.5.5.1), and especially *text type* (8.2.1.1), all of which can be seen as the discursive effects of *de-anthropomorphization* (7.1.1.1):

> [It can be taken as a specific feature of scientific discourse that it displays] Objectification, de-subjectivization, de-rhetorization and de-historization. Kretzenbacher (1995, 26 ff) derived from observations on the same-self conventions of language use [Ger. *Sprachgebrauch*] his thesis on strong restrictions in scientific discourse. These are "absolute, tacit and unquestionable prohibitions [Ger. *Verbote*]" which were rooted in the *taboo* of using the *first person singular, metaphors* and *narrations*. [...] Deviations will be noticed and lead to the stigmatization of the offending individuals within the group.
> Möhn, 1998, 153, my translation and emphasis

The adoption of an expository procedure (which could be seen as aspect of *scientificity*[2] as a *text-world model meta-scheme* used for discourse production, (4.3)) in conjunction with an *instrumentally rational nomothetic agenda* as *discourse-world meta-scheme* (7.1.1.1) which seems to entail conventions like the above by way of associative stereotype (2.5.5.2) may produce discourses and texts in "disciplines that study human behavior" (Heylighen, (8.2.1)) that fall short of the describing human behavior by taking the principle of *de-anthropomorphization* (7.1.1.1) too far. Over time, the practice seems to have generated (or encountered, see (7.1.1.2)) a countermovement:

> Over the past fifty years or so, scientists have allowed the *conventions of expression available to them to become entirely too confining.* The insistence on bland impersonality and the widespread indifference to anything like the display of a unique human author in scientific exposition, have not only transformed the reading of most scientific papers into an act of tedious drudgery, but have also *deprived scientists of*

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[2]Intuitively, one may also link this to the naturalist conception (3.3.1) of *scientificity* in particular, although there is no reason to suspect that this follows as a matter of course; conventions must be seen as contingent (6.1.2.1).

> *some powerful tools for enhancing their clarity in communicating matters of great complexity.* [... C]oincident with the explosive growth of research, the art of writing science suffered a grave setback, and **the stultifying convention descended that the best scientific prose should sound like a non-human author addressing a mechanical reader**.
>
> Mermin, cited in Pavel, 1993, my emphasis

Yet, from the point of view of terminologists who have internalized a conventional pattern of recognizing terms as nouns and their compound set phrases and specialized collocations (as *terminological stereotypes*, (2.5.5.3)) followed by defining statements in sentence form, this discursive gestalt might appear to be most readily *assimilated* (see definition/ discussion of *assimilation*, on page 101) to the conventional scheme (traditional terminography, (5.1)), whereas narrative forms might be unfamiliar, requiring the *accommodation* of the *scheme* along the lines set out in (4) and (5).

The study of human sciences that do not display fixed *conventions* in this regard (according to the above breakdown, "psychology, sociology, economics, anthropology, history, media studies [...] psychiatry, philosophy") and adapt their discourse to their *agendas* (7.1.1) and the *cognitive interests* (7.1) of individual practitioners (which may lead to the emergence (6.3, § 3a) of *conventions* on the sub-sub-cultural level of our phenomenology (7.1.2.2)) may pose a particularly "wicked" challenge for terminological and terminographic study.

At a bare minimum, we might therefore distinguish a "sciences" or "humanities" *codification mentality as part of* a (sub-)sub-cultural *agenda* (7.1) that makes a discourse community recognizable in terms of the "two cultures" conjecture.

In conjunction with this, intellectual style (8.1) *may* play a role where it synergetically aligns with the *agenda* in the first place[3]. Given that *meta-schemes* serve for both information- and discourse production, one could see the "two mentalities" as *meta-codification schemes* (5.1), which are expressed in the preferences for patterning texture in a certain way. However, what would the "opposite" mentality look like?

8.2.1.1.2 Humanities codification mentality

In terms of the second, or "human sciences" or "*geisteswissenschaften*" mentality, it is difficult to derive any such simple recipe. We will need to rely more on the concepts of *declarative* and *procedural disciplinarity*, *scientificity* and interpretation in order to induce the *conventions* of discourse production here.

The mode of abstraction will differ according to deductive criteria introduced for other concerns, such as convergence with a foundational belief (3.3.2) or the avoidance of contradiction (3.3.3) and therefore a quasi *a priori* interpretation of the experiential world will be a feature of the process.

Secondly, due to the *contingent* nature of phenomena and their description in idiosyncratic idiographic phenomenologies, there will in principle be considerable leeway for the selection of phenomena (due to the loose organization of *topics* and their experiential intricacies (6.2.1)) and their terminological representation, which seems however to be paradoxically canceled out by the *conventions* of the field, an aspect in which the "two cultures" can be seen as remarkably similar.

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[3]One could hope for a moderating influence if intellectual style and disciplinary culture are at variance, but the insight of the case study in this regard (8.1.3) are discouraging. As an implication for further work, one could posit the possible *amplification of cognitive bias* as a hypothesis.

For example, there would be the peer pressures in institutional environments and the larger culture, such as e.g. Galtung observed (8.1.1). Those working within a more judgmental (sub-)culture may be significantly more "Aesopian" in their choice of *retronyms* (5.3) over genuine neologisms (which Riggs calls "*neoterms*"):

> For social scientists [...] the discovery or invention of a new concept is typically greeted with forbidding skepticism, and the assignment of a neoterm to such a concept usually meets even greater resistance. *Substantive issues concerning the newness and value of a candidate concept tend to be bypassed invidiously and the coining of neoterms is typically hooted down with ad hominem aspersions.* To avoid such damaging treatment, the innovative social scientist hides inconspicuously behind innocuous neosemanticisms. The resultant Aesopianisms may be intelligible to the friendly few who are interested in the new concept, but they remain ambiguously obscure to those who are not substantively interested and take no offense at the use of *familiar words, however misused they may be.*
> Riggs, 1982b, 247, my emphasis

What such *"ad hominem aspersions"* can look like at their worst will be seen in our second case study. If one gives credence to the observation in its entirety, the introduction of *neologisms itself* may be seen to carry a penalty of negative sentiment in a humanities context[4], which is why their avoidance may be inculcated into beginning researchers in textbook passages such as this:

> Academic readers are especially resistant to 'neologisms' (the invention of new terms and vocabulary). They also will *hate* your interpreting established terms with a different meaning from those already in use.
> Dunleavy, 2003, 30, my emphasis

The use of very strong affect words like "hate" bespeaks a stigmatization of deviant individuals that points to a *convention* (2.6) that has the strength and function of *taboo* (7.2), only that it here pertains to the level of *lexis* rather than *texture* (3). Interestingly, we also find an explicit proscription of *retronymy* (2), which however seems to run into certain practical limits (4.1.1).

As conformity with existing terminology use thus apparently becomes a critical requirement, coinciding with the apparent preference for consensus-evoking language within the confines of sub-culture (and sub-sub-culture), it can hardly be considered surprising that other researchers found an overarching preference for "for internal use within the field over external use beyond its borders" (Beaugrande, 1993, § 3.1.1.1), which is however seen as general feature of special languages; adapted to the context, we would be talking about two specific functions of terminology, namely that the use of an established terminology serves to assert "a claim to authorization [...] the relevant function [of which] is to signal that the instantiated complexes of knowledge are authorized by the *established consensus* in the field" (ibid., § 2.2.4) and that such terminology also acts as "system of signals to distinguish insiders from outsiders" (ibid, § 2.2.5).

In the above, we may see some indication of the *conventions* that form the framework for *worldview construction* and discourse production within the "humanities mentality".

The traditionalism with regard to terminology use may hinder the construction of "technical understandings" as expressed per the creation of taxonomies (which lend themselves to more semantically unburdened *neologisms*) and definition systems. The resulting lack of the possibility

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[4]and from a linguistic/ technical perspective collocate with negative *affect words.*

for formalization and visualization seems not only to be accepted, but also to be taken as a *positive criterion of identity* with regard to some discourses:

> Let it be granted that images can convey certain forms of knowledge quickly and easily - chiefly scientific knowledge, which is today the model of knowledge. [...] a functional, simplified imagery, as on a computer screen, is the one best means to adapt people to the efficient, streamlined technological environment, which needs visually oriented people to expand and reticulate, if only for the sheer amount of information to be processed and disseminated. [...] **Present students** have grown up on the use of [visual imagery and] formulaic computer language that refers generally to the reality of the technological environment [... their **l]ack of interest in literature and the condemnation of philosophy reflect the inability of these disciplines to convert themselves into diagrams**.
> Russo, 1998, my emphasis

Note again the presence of *affect words* here. Although we are (still) speculating on *contingent* evidence, this resistance seems to reflect the mentality that speaks from the difficulty in defining the human sciences as discipline label without reference to *topical* and *temporal dimension* of a specific, encultured sector of context (7.1.1.2).

This also complicates the task of describing, in the succinct way that Möhn/ Ehlich do, any intrinsic discursive conventions that might have the quality of *taboo* (7.2), although we might induce from the above perhaps something like a *taboo of neology* that seems to be observed as strictly as any of the *register taboos* of the "scientific" *codification mentality.*

In many ways, the cognitive effects of the former taboo may appear to be more restrictive: while the adaption of most statements to the discursive *conventions* of the former *codification mentality* might be accomplished by simply rewriting passages in passive voice, toning down knowledge claims and opting for literal *neology* instead of metaphorical lexicalizations[5], the stricture of insisting on established use of lexis (and therefore of remain within the limits of the "dialogue of the dead", Francois, (1.1.3)) all but precludes that discourse producers "terminate" (5.3) their constructive operations (4.1.1) with a *recognizable* and therefore *representable* expression and thus develop their interpretations in a continuous way that has the semblance of *creativity*[6].

However, as Riggs' observations on *neosematicism* (1) have demonstrated, discourse producers seem to have developed *tactics* (compare Neubauer, 2012a) to subvert this *convention*, albeit in a way that is inimical to descriptive terminography of the generic type (5.1) and requires extraordinary effort on the part of the discourse producer if they aim at the creation of a systematic terminology (see Main conclusion).

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[5]This is really a point of contention that can be reduced to classical vs. prototype *concept* theory: "Aristotle also sees metaphor as a kind of deviance from normal usage, its role being only ornamental. Therefore it should be possible to replace a metaphor by its equivalent literal expression. This brings Aristotle also close to the substitution theory which is defined by Way (1991: 23) as 'any view which holds that a metaphorical expression is used in place of an equivalent literal expression and is, therefore, completely replaceable by its literal counterpart'." Temmerman, 2000, p. 160. Our argument requires assuming that *syntagmatic* substitution is possible in principle, but gives rise to *suboptimal articulations* (compare Mermin/ Pavel, above).

[6]Without going deeper into the subject matter here, we assume that *creativity* is at a minimum the capacity to re-assemble conventional *syntagmatic* and *paradigmatic* components in *functionally* novel ways; compare the following: "[...] 'having new ideas' is not (as mystified vitalism proclaims) making unheard-of things abruptly appear out of nowhere, but persistently interconnecting, annotating, or recompiling elements of your prior knowledge and experience in more supportive modes" (Beaugrande, 1997a, § 97). Given this, *neology* requires the recombination of e.g. *morphemes* and *lexemes* into novel *syntagmatic* forms, whereby conceptual creativity resides on the *paradigmatic* side and comes to the fore in the action of associating conceptual properties (*paradigmatic* constructs) with each other and/ or a new or conventional *syntagmatic* form.

Such efforts may include the systematic study of *explications* (5.3) and their embedding in sub-culture and sub-sub-culture- (i.e. context-) specific *textures* (3) or text gestalts that may be as difficult to *categorize* as the *imports* (3.3.1.1), *inter-domain borrowings* (3.3.1.2), *retronyms* (2) and *rhetoremes* (8.2.2.2) they contain.

As the *neology taboo* stands besides the rejection of formulaic codification and geometric taxonomy (this term seems appropriate for a structure that can be visualized), these problems seem to be aggravated. A positive preference for *narrative* and *argumentative text types* (8.2.1.1) in and of itself cannot explain, as noted, the aversion to expressive means in question.

With regard to *what* is being to narrated and argued, we can make another inference from the negative tendency before we move on to look at the anatomy of a specific debate: given the ubiquity and success of *instrumental reason* (7.1.2) in a larger social context (which has ironically also left its trace in the historical development of the idea of unified *geisteswissenschaften*, (7.1.1.2)), we could expect the traditionalist position to be generally on the defensive:

> Science Made the Modern World, and it's science that shapes modern culture. That's a sentiment that gained currency in the latter part of the nineteenth century and the early twentieth century – a sentiment that seemed almost too obvious to articulate then and whose obviousness has, if anything, become even more pronounced over time. Science continues to Make the Modern World. *Whatever names we want to give to the leading edges of change – globalization, the networked society, the knowledge economy – it's science that's understood to be their motive force.* It's science that drives the economy and, more pervasively, it's science that shapes our culture. **We think in scientific terms. To think any other way is to think inadequately, illegitimately, nonsensically.**
> Shapin, 2008, 433, my emphasis

This can be ascertained to some extent against discursive evidence concerning the reactions to the phenomenon; in specialized linguistics, for example, the two cultures conjecture has been received largely in the context of special language criticism, or the criticism of scientific language in the human and social sciences, a sub-field which among other things has the *agenda* of describing tendencies like those listed in our reflections on the humanities *codification mentality*:

> In this context, scientific special language appears [...] as the "membership card" of a small group inside society which is widely seen as privileged. Old topoi of Enlightenment criticism of religion [...] are becoming virulent [...] with regard to "the intellectuals" (Schelsky 1977). *That this criticism is mostly articulated by members of the same in-group makes it an extraordinarily intricate construct which is difficult to dissect analytically* [...] Critical discourses of this kind are rarely targeted against the special languages of the natural sciences [...] the controversial issue seems to be centered on the discourses and texts of the human and social sciences [...] which are apparently seen as subject to the requirement of general intelligibility. [...] The differences between the special languages of natural and human sciences [...] expressed in Snow's conception of the two cultures [...] are **radicalized in attempts to question the one or the other culture's right to exist** [...] Its [...] consequences are especially **restrictive policies** with regard to the [institutionalized] human sciences on the part of political bodies in charge of higher education [...] as they have increasingly been witnessed [...] (e.g. in Great Britain) since the 1970s. **The criticism of scientific special language here manifests itself in the desire to eliminate scientific specialties [.]**
> Ehlich, 1998, 860, my translation and emphasis

It stands to reason that any analysis of specific debates that relate to the two cultures conjecture and the extension of its implications into sub-sub-cultural contexts needs to be calibrated for the appearance of extremely pointed rhetoric, which has its background apparently in the perceived *threat* rationalization poses to the livelihoods of discourse participants.

8.2.2 Case example: Radical constructivism in philology

The following is a case study that should help to exemplify the application of the two conjectures – and most other considerations that have entered into the present work – in order to situate two texts that express an argument along the lines of the *paradigmatic agendas* of *instrumental reason* (7.1.2.1) and *pure phenomenology* (7.1.2.2) and the *codification mentalities* that seem to complement them in *syntagmatic* terms.

That the debate in question was in its entirety conducted in German and is presented here in our partial English translation should be seen as an acknowledgement of the difference in cultural categories, from which the present researcher is not exempt (7); it should also be seen as an empirical test case for multilingual *philosophical terminography*, which, as previously found, needs to be prepared for unpredictable term adoption across linguistic communities (2.2) as well as for translation phenomena which black-box *socio-historical contingencies* ((6.2.2.2), (7.1.1.2), (7.2)).

8.2.2.1 Topical and temporal context

The texts in question both appeared in the publication *Deutsche Vierteljahreszeitschrift für Literaturwissenschaft und Geistesgeschichte* (approximately *German quarterly for literary studies and the history of ideas/philosophy (?)*) between 1994 and 1996. As the title of the publication suggests, one could assume that there are normally four issues a year. This suggests that the critique and riposte are at a maximum nine, and at a minimum six issues apart, which would appear as a *long* reaction time (1.3.2) by today's standards. That the dating is inaccurate must be put down to the fact that both "specimens" are preserved as electronic reprints in the corpus of the University of Vienna's constructivism portal, with an inaccuracy in the bibliographic metadata of the first text. The journal itself does not maintain an on-line archive going back as far as the early 1990s and the full text of the articles is not accessible to the general public in any case.

As can be inferred from the original publication title, the *topic* is literary and historical studies in general (7.1.1.2); however, an analysis of field labels in the first text shows that the *topic* under discussion is not only *radical constructivism*, in the guise of *second-order cybernetics* itself a transdisciplinary philosophical ideology (6.2.2.2.3) that transcends the historically contingent sciences/ humanities division (7.1.1.2), and an adjunct school of literary theory termed *empirical literary studies* associated with S.J. Schmidt (7.1), but also various other *topics*[7]. The listing also includes references to schools of thought and therefore is to be seen as a text-specific breakdown of the sub-culture/ sub-sub-culture complex. It is irrelevant here whether the *topics* are actual contexts or *metaphoric domains* (the latter will be illuminated under the terminological aspects of the reception, in the light of *codification mentality*). The fields have been ordered topically in

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[7]*topics* in our sense (6.1.2), which are listed here by their German designation and the most likely approximate field labels (compare (2.2)); bracketed question marks indicate doubt that an common sub-sub-cultural discourse is evident in the English-speaking world.

order to give an impression of the thematic breadth (but not necessarily depth); the order presents an (imaginary) educated commonsense understanding rather than a *philosophical classification* (6.2.2.1), although classificatory issues and therefore concerns about the immanent "elimination" of literary specialties (Ehlich, above) *do* present an issue of contention in the text, as will be seen:

1. Geisteswissenschaften [Human sciences]

   a) Soziologie [Social sciences]

      i. Empirische Soziologie [Empirical social sciences]

         A. Systemtheorie [Systems theory]
         B. Kritische Theorie [Critical theory]

      ii. Medienwissenschaft [Media studies]
      iii. Literaturwissenschaft [literary studies]

         A. Empirische Literaturwissenschaft [lit. empirical literary theory (?)]
         B. Historisch-kritische Hermeneutik [lit. Historical critical hermeneutics (?)]
         C. Poetik [Poetics]
         D. Hermeneutik [Hermeneutics]
         E. ***literary criticism*** [left English in the original[8]]

   b) Philosophie [Philosophy]

      i. Erkenntnistheorie [Epistemology]

         A. Radikaler Konstruktivismus [Radical constructivism]

      ii. Ontologie [Ontology]

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[8]It is not our intention to be involved in the sub-cultural/ sub-sub-cultural debate in question, however one may ask whether this figment does present a muted concern about perceived "Anglicization"; on the two cultures perspective, it might be construed as a concern about a *prototypical* school of thought associated with Anglophone literary criticism that seems to have adopted a "scientific" *codification mentality* and has therefore been received accordingly by traditionalists: "The New Critics of the 1940s and 1950s attempted to protect the verbal artifact from the pressures of historical necessity and mere utility; yet their method was a direct reflection of those pressures. New Criticism was a kind of synecdochic condensation of the technological system in its antihistoricism; its objective neutrality and treatment of the poem as a clinical specimen; its quasi-scientific emphasis on specialization and method together with a meager, mostly inconsequential theorizing; its myths of synthesis and autolechy; its metaphors for organization. The New Critics fostered a straightforward, roll-up-your-sleeves approach to criticism that valued technocratic expertise, teamwork, bureaucratized efficiency, and anonymity (though a few top stars always get the prizes)", Russo, 1998. It is noteworthy that one of the founders of this school, I.A. Richards, is the same person who together with K. Odgen devised the hitherto most influential and widely used sign model of terminology, the semiotic triangle (Cabré, 1999, p. 40; Wright, 2003, p. 115).

      A. Wissenschaftspositivismus [Scientific positivism]

    iii. Ästhetik [Aesthetics]

    iv. Mathematische Logik [Mathematical logic]

2. Naturwissenschaften [Natural science]

  a) Biologie [Biology]

    i. Neurobiologie [Neurobiology]

      A. Kognitionstheorie [approx. cognitive science (?)]

  b) Datenverarbeitung [Computer science]

Conspicuously absent is *terminology research* as discipline label, although the aspect of the critical paper that is to be reviewed here and the associated riposte revolve around core areas of the discipline (2.1). An overview over the broader context will be given in order to orient to the larger context with view to *sentiment* and *stereotype* (2.5), and the impact of the phenomenon of *contratextuality* ("an aspect of intertextual reference which, instead of evoking an image, seems to preclude it, as when political speakers use their opponents' terminology for their own ends", Hatim and Mason, 1990, p. 240) on terminological *retronymy* (above; (2)).

8.2.2.2 Gehrke's argument

The following is a critical review of the first text that comprises the debate, Gehrke 1994. All of the below is my interpretation and translation of the text, verbatim items in quotes. Gehrke criticizes radical constructivism as a *totalizing metanarrative*[9], whereby no distinction is made between different forms of constructivism[10]; the addressee is rather the so-called *empirical literary studies* program associated with S.J. Schmidt and others, insofar as it is seen to tend towards the *naturalist* (3.3.1) neurophysiological constructivism associated with H. Maturana (compare the term *undifferentiated encoding*, (3.3)). Gehrke identifies as a *foundationalist* (3.3.2) by claiming that for the critique of a philosophical system, an "explicit standpoint" is necessary[11]. He assumes the perspective of "historical-critical hermeneutics", a (literary?/ social?) theory derived from T.W. Adorno, who is associated with the Frankfurt school of sociology (Abercrombie, Hill, and Turner, 2006, Adorno, Theodor W.) and therefore also with J. Habermas (Abercrombie, Hill, and Turner, 2006, Habermas, Jürgen), who is known for his public debate with Luhmann and

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[9]Though Gehrke might not appreciate this translation (due to the *postmodern* connotation of the term), it can be seen to capture the core argument succinctly: "Western postmodernists such as Jean Francois Lyotard (1984) [...] argue that any attempt to arrive at uniform standards of truth or value involves the construction of a totalizing metanarrative which is inherently oppressive to the voices of minorities", Evanoff, 1998.

[10]Glasersfeld's *coherentist* (3.3.3) post-cognitivist/ post-epistemological psycholinguistic constructivism which is the central theme of the present work only appears on the margins in the text. While an overlap between the philosophical systems exists in terms of argument, citations and terminology, they are not fully commensurable (let alone identical) and some amount of "translation" is necessary between their terminologies (compare Glasersfeld, 1990c).

[11]Compare Galtung, above

therefore his critical views on systems theory (6.2.2.2.3). It is clear that much of the critique is mediated by the *stereotype* (2.5) of systems theory, which likely entails different cultural perceptions such as those outlined previously (6.2.2.2.3); constructivist ideas are mainly seen in terms of their *similarity* to it, whereby individual features are neglected:

> [Systems] theory has been extensively criticized[.] The arguments against social systems theory are [... that] it cannot deal adequately with the presence of conflict and change in social life; [...] its assumptions about equilibrium and social order are based on a conservative ideology; [...] it is couched at such a level of abstraction that its empirical referents are often difficult to detect [...] Its assumptions about value consensus in society are not empirically well grounded; [...] many of the propositions of the theory are tautological and vacuous. [...] In the late 1950s and early 1960s, critics of [...] systems theory argued in favour of conflict theory as an alternative perspective. In the 1970s, Marxist theory, with its focus on change, conflict and contradiction, came to be seen as the major alternative to systems theory. However, there is now a recognition that [...] **Marxist theory itself is based on a concept** of the social system [...] **systems theory is not inevitably tied to assumptions about static equilibria or to a conservative ideology** [...] there are models of systems other than those developed in the biological sciences [...] cybernetic models of social systems provide an alternative to crude analogies between social and biological systems by examining the importance of information in exchanges between sub-systems. **Further possibilities for the development of systems theory were opened up by Habermas** in the analysis of the legitimation crisis (1973) of contemporary capitalism. **Systems theory does not in principle preclude notions of contradiction, conflict and change in the analysis of social systems.** The consequence of these developments is that **the concept** of social system is not uniquely tied to any particular branch of sociology, but is a *concept* which is basic to all sociological paradigms.
>
> Abercrombie, Hill, and Turner, 2006, systems theory, my emphasis

This of course must be seen under the auspices of the two cultures conjecture previously developed, which in turn rest on the distinction of (seemingly) opposing *agendas* of *instrumental rationality* (7.1.2.1) and *phenomenological understanding* (7.1.2.2). As the argument develops in terms of goals (3.3) and methods (3.5), it generates the impression that Gehrke subscribes to the "Teutonic" argumentative convention of portraying the opponent not only as wrong, but fundamentally wrong, which may or may not be a figment of the monolingual background of the (German-only?) philological context (no texts in other languages appear on the bibliography).

Above the expected level of confrontation, ulterior political motives are also imputed to the proponents of constructivism, in the course of a sub-narrative that portrays the idea of a empirical form of literary study based on *naturalized constructivism* (absurdly) as a proto- or crypto-fascist ideology that calls for "total compliance" with its idea of "intersubjectivity" (compare Schmidt's riposte, as well as the *defining context* for *intersubjectivity* (3.5), although understandings of course vary). This is expressed in a subversive interpretation of the (technical) term *structural coupling*, which is discussed below.

Here, we can see the influence of the *cognitive stereotype* (2.5.3) relating to systems theory from the perspective of those who (fundamentally) oppose it; apparently, it gives no room to assessing the differing individual characteristics of any particular version (compare Abercrombie, above). As to constructivism as a variant of *naturalized epistemology* ((3.3.1), with regard to which a different *stereotype* prevails, i.e the deservedly negative one of social Darwinism), it is

(subversively) interpreted as *"post*-modern" (Gehrke's original hyphenation and emphasis style) in the sense that it wants to abolish abolish Enlightenment rationality and humanism, and ultimately the very concept of humanity (Lat. *humanitas*):

> *[Fragment 1.1]* Following a materialism which consequently equates the mental/ cultural/ spiritual [Ger. *Geistiges*] with physical brain activity, it drastically turns away from everything that is philosophically subsumed under *humanitas* and declares perception and all forms of [human] interaction epiphenomena of **structurally determined** laws of synaptic connection. The idea that human beings are fundamentally different from all other life-forms is ignored, because it doesn't fit [Radical Constructivism's] cognitivist fundamentalism which would explain everything from the biological constitution of the **organism**. The idea of the [individual] subject is practically reduced to nil in the process of naturalizing the human sciences [Ger. *Geisteswissenschaften*]. Human beings become mere coordinates within **operationally closed systems** [and are] seen as solely interested in preserving their capacity to function, which is the last requirement Radical Constructivism admits for **the conditioned reflex-controlled "human sending and receiving gear"**.
> Gehrke, 1994, my translation and emphasis

Here, we can find an instance of (partly) formally "correct" terminology use[12] that bespeaks intended *contratextuality* in the apparent *text-world model*; the other highlighted phrase[13] consists of *rhetoremes* invented for rhetorical effect and interspersed with the other units in the *argument*; they are partly behaviorist-inspired (*conditioned reflex*; (4.3, § 1c)) and partly *information-theoretical* (3.3.1) as to amplify the *non-human* reading of the discourse that Gehrke argues. Ironical formations like "*human sending and receiving gear*" are employed to enhance the coherence of the contratextual anti-image to be evoked.

The term *rhetoreme* is an expression relating to lexical choice, primarily with regard to solving rhetorical problems (e.g. the description and questioning of concepts and the persuasion of people, Riggs, 1982b, pp. 235/236). Such problems in the context of academic sub-culture/ sub-sub-culture need to be seen against the background of their *function* of human science terminology, i.e. the assertion of claims to authorization and the distinction of insiders (Beaugrande, 1993, above). Thus, the *rhetoreme* can be seen as special kind of term encountered in the human sciences, and one that would not necessarily encounter interest outside a *sentiment analysis* (8) context in terminology research. Its function is mainly connotative, or to be specific: the placement of a *rhetoreme* in a cohesive piece of texture can *alter* the connotation of other units, as the above example should demonstrate ((5.1); restriction to the sentence as co-textual unit would make any conception of terminography largely blind to the phenomenon). The *rhetoreme* therefore has the functions of expressing a *worldview* element (4.2.1), implicitly and explicitly constructing an *argument* (here both in the rhetorical and technical sense, which can be seen as a text part within the continuum of exposition/ narration and argumentation) and "compressing" it (5.3) for later reuse, whereby it is not excluded that the *rhetoreme* can be unstable, i.e. coined ad-hoc and used transiently, which contributes to its potential *indeterminacy*.

While the above critical interpretation of the text mainly served to outline its argument, the ideas of *contratextuality* and *rhetoreme* introduce the main point of the case study, namely analyzing the terminological function of argument or rather the critical function of terminology,

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[12]Our translation of the terms in bold italic type follows precedents as they appear in Glasersfeld 1990c, Maturana 1988.

[13]Emphasized in bold typeface, and translated so as to give an analogous impression.

which can be seen as largely inseparable from wider philosophical concerns with the ideological content of the *worldview* that is to be partially articulated (4.2.2) in the textual forms we have tried to characterize (compare list of topics, above).

This is perhaps the most cognitively interesting and cogent aspect of Gehrke's critical effort. He refers to radical constructivism's need to "find a language appropriate to its concepts" (Schmidt, cited ibid.), given that it does not accept that language can *transmit* meaning[14] (compare (3.3.1), (4.1.1)). He observes that – at least for the variant of *naturalist constructivism* that features in the *"empirical literary studies"* program – this language is to be created by "the construct of a metalinguistic domain, in which language is to be charged with meaning via definition" and to which "objectivity by virtue of descriptive content is admitted out of sheer epistemological need". This brief characterization lets Gehrke's idea of the "scientific" *codification mentality* and his apparent aversion to it shine through. It appears to conflict his own stylistic and ideological precepts (i.e. his *foundationalist* beliefs), a point at which quoted material seen as expressive of these precepts is activated in the text. T.W. Adorno is cited as counter-point:

"Science needs the idea of the concept as a *tabula rasa* in order to assert its claim to institutional hegemony as the sole legitimate power" (Adorno, cited ibid, my translation; compare Shapin, above). The interpretation of the opponent's attempts at lexical creativity and the entailed verdict follow: The constructivist preference[15] for "strict definitions" is interpreted in terms of an attempt to portray its own terminology as "operationally effective" vis-a-vis a scientifically dysfunctional general language (compare Riggs, above). Gehrke does not seem to believe in conceptual creativity either; the verdict here is that the constructivist terminology is in fact devoid of meaning (Ger. *Begriffshülse*, lit. a conceptual/ terminological empty shell) and that its only purpose is to deceptively create the appearance of complexity and differentiation, coerce the recipient into believing the associated ideology and deflect criticism by incomprehensibility and obscurity, which also function to mask the previously imputed ulterior motives of the constructivists. This echoes a critique of the *agenda* of *instrumental reason* as well, since it targets the *structural metaphor* (6.2.1) of digital computation seen as underlying the *lexical fields* (5.4.2.5) surrounding some – very widespread – terms associated with the variant of empirical literary studies [16]. Most representative of the critique is this fragment:

> *[Fragment 1.2]* One of the core functions of constructivist terminology is the accommodation of the imperative immanent in technocratic consciousness that the mental/ cultural/ spiritual [Ger. *Geistiges*] has to comply with whatever appears as technological progress [...] this kind of *scientific communication* [the constructivist] demonstratively aligns itself with the discourse of information and communication technology that emphasizes speed and operationality [.]
> Gehrke, 1994, my translation

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[14]It is imputed that radical constructivism means to study cognition in isolation from language, but this likely another figment of rhetoric (compare Schmidt's reply, below and Glasersfeld, cited in (3.3.3)) under consideration for different forms of constructivism.

[15]That this is not a feature of *all* constructivism can be taken as practically demonstrated by our attempt to define some terms of scheme theory in Chapter (4). In the light of Gehrke's critique, one might look at Glasersfeld's radical constructivist philosophy as a product of a *moderate* "humanities" *codification mentality* under the dialectical/ synthetic influence of the "scientific" counterpart. The *coherentist/ pragmatic/ naturalist* model of *scientificity* it displays may be seen as a function of this – or the reverse – depending on whether it is construed as *conceptualist* (i.e. concepts come first) or *nominalist* (i.e. language comes first) in terms of the language of the medieval "dispute of the universals" (Glasersfeld, 2001c).

[16]As listed by Gehrke, these are: *hardware, software, compatibility, application* (as software program), *zapping, output, input*

Here, we may diagnose a *discursive associative stereotype* (2.5.5.2) related to an *instrumentally rational agenda* (7.1.2.1); constructivist researchers are seen as averse to reflection[17] and "deteriorated to mere managing employees of the inscrutable deluge of information, whose task is the revision, ordering, sorting and repetitive testing of already gleaned insights".

With regard to the contestation of *topics* (6.2.1), the socio-economic aspect of the "two cultures" rhetoric and the resulting polarization that has been hypothesized before, we may note that Gehrke resists the appropriation of literary studies as a sub-field of media studies ("[...] empirical literary studies is expected to give up its autonomy and to continue, in the words of S.J. Schmidt, as 'specification of general media studies"'', which in Gehrke's view would lead to the obsolescence of literary studies (here: German philology) as an academic course of study and its replacement with a range of applied courses on subjects that the critic apparently regards as *inferior* : "empirical literary studies [...] aims to redefine the human sciences as a service enterprise with the aim of training employees and administrators for the infrastructure of media culture [...] looking at the professions that this comprises (language consulting, [remedial?] reading courses, cultural management, art marketing, workshops for study travel or leisure time) [...] one may ask whether the study of German philology is really necessary for this application or whether a courses on the level of universities of applied sciences would suffice").

The rest of the paper discusses German philology-related aspects unrelated to the purpose of the case study. As noted, this is excluded as non-relevant for our purposes and not addressed, except for the two previous arguments.

Next, we will turn our attention to the reply. After an outline of its argument, we will investigate the effects of *contratextual* devices and *rhetoremes* on terminology use, which also includes a contrastive study of the reception of the *neologism "structural coupling"*. This will exemplify the method of *philosophical terminography* as applied to empirical terminology description.

8.2.2.3 Schmidt's counter-argument

The following is a critical review of the second text that comprises the debate, Schmidt 1996. All of the below is my interpretation and translation of the text, verbatim items in quotes. From a quantitative viewpoint, one could say that the text is short compared to the Gehrke's side of the argument (7198 words vs. 2370, respectively); its chief purpose could be characterized as an attempt to correct what Schmidt sees as the defamatory misreading[18] of constructivist literature,

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[17]*Mutatis mutandis,* we might extrapolate this attitude to the necessary knowledge ordering activities, should it be representative of the "humanities" *codification mentality* or *agenda* in any way, to the explanation of the "non-recognition of [the] scientific value" of terminology research that e.g. Wijnands (1993, p. 167) perceived. Such arrogance is demonstrably unwarranted: for one, "rationalization in the area of mental/ linguistic representations [Ger. *Geistiges*] would appear an all the more pressing concern as it would lead to new methods in managing the mass of actual and potential information in an ever more complex world", as Dahlberg (1974, vii, my translation) noted already in the 1970s. Especially with regard to the human sciences, knowledge organization should appear sensible as the amount of human sciences texts relevant to any particular scholar grows persistently: older works are not superseded while new ones are steadily added ((1.3.2), (6.2.2.2)). Secondly, the ordering of especially linguistic artifacts has itself a creative function, which should emerge on introspection: "the creativity of [descriptive] terminology collection consists in the *original* combination of different items of information from different sources in a consistently assembled terminological record" (Budin, 1996b, 156, my translation), which, as demonstrated in (4), might be mobilized for the creative practice of any linguistically constituted humanistic specialty, including philosophy (of science, of information).

[18]While the intent to defame must be recognized, we would at least give Gehrke the benefit of doubt with regard to his interpretation in conceptual terms, and admit that with regard to his conceptual constructions, the stated reading really conforms to the information he may have had previously constructed (4.1.1), whereby the connotative re-configuration of the terminology bespeaks its function within the author's *worldview* and *discourse-world model*, and not the meaning that the terms "really have". Framed thus, the question would

so that consequently Gehrke's text is reverse-engineered from the bibliography and the full text of the distorted citations is presented to the reader for comparison. The *tenor* (6.2.1.3) here is largely one that corresponds to that of addressed text:

> *[Fragment 2.1]* When it comes to fighting so dangerous a foe like "the" radical constructivism, the critical hermeneutics adept must not be afraid of using drastic means [...] in order to unmask the full gamut of its depravity against spirit and culture, one must not shy away from making claims without substantiation, sweeping simplifications and accusations without any proof. Here, a some evidence to this effect will be submitted [...] The incriminations that the "critical thinker" Gehrke mobilizes against the constructivists [here, *Fragment 1.3* is quoted] gains a dangerous political dimension [...] Whoever is not capable of comprehending a complex scientific discourse, like Mr. Gehrke, who cannot distinguish epistemology, philosophy of science, object theory, methodology and theories of the constitution of scientific objects, who manipulates citations in order to propagate prejudicial opinions might want to steer clear of political defamation that involve associations with the Nazi regime and therefore is on the borderline of slander that can bear legal consequences [.]
>
> Schmidt 1996, my translation

As in the above, we will only make reference to statements that are relevant within the context of *codification mentality* (i.e. the experiential unity of *scientificity*, *disciplinarity*, *stereotype* and *agenda* as they evoke a person's construction of information in interaction with a text gestalt, or *texture*) and to the debate as it revolves around the interpretation and open discussion of the de- and connotation of specific terms.

Here, the issue of contention is a family of forms that could be characterized as a *lexical field* (5.4.2.5) growing from a biological *structural metaphor* (11) that could be formulated as COGNITION IS ADAPTION rather than any particular term, although the argument uses the example of *"structural coupling"* as its prototypical focus. The metaphor has largely been interpreted, as noted, through the stereotypical frames of (sociological) systems theory and imputed social Darwinism. Here, metalinguistic considerations on term formation and therefore *codification mentality* loom large. The following example of juxtaposed fragments might exemplify this point:

> *[Fragment 1.3]* Intersubjectivity primarily suggest recursing to "***consensual domains*** as socially accepted realities", which means nothing if not that the researchers identify with a *constructed collective* which remains as abstract as it is diffuse and the only purpose of which is to be in *agreement* with the social and political powers that be. The larger aim of Radical Constructivism is the maintenance of the status quo. Criticism and change are precluded under the rules of ***autopoietic systems*** on which radical constructivism is founded, because "***consensual domains***" can only emerge through "***structural coupling***" (which we have translated as *adaptation* [Ger. *Anpassung*]).
>
> Gehrke 1994, my translation and emphasis

As the fragment above is my translation, the connotative aspect cannot readily be captured without giving consideration to the senses of the German word/ term "*Anpassung*"; the following

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be how the interpretation might have come to be this way (compare Glasersfeld, (1.4.2),(2, introduction), and (4.1.2) in general) and not how "misunderstanding" can be most efficiently suppressed. If constructivist thought can absorb this insight, in *philosophical terminography* and other applications, then the predicate "radical" is indeed well justified. Otherwise, any discussion of philosophical terminology would soon deteriorate to the level of (negatively connoted) *scholasticism*, see below.

figure presents an overview using glosses[19], as presented in (2.3.3), in conjunction with thesaurus data (5.3) in order to supply material for the construction of an interpretation across the barriers of cultural categories and different natural languages (7):

1. jemandem, einer Sache anmessen; für jemanden, etwas passend machen   *(of a person) to adjust to something or someone,*   *(of a thing) to be altered to fit something or someone.*   **2. etwas einer Sache angleichen; etwas auf etwas abstimmen**   *(of a thing) to normalize, or readjust something to fit something else*   **3. sich jemandem, einer Sache angleichen; sich nach jemandem, etwas richten**   *(of a person) to assimilate to something or somebody (e.g. a society),*   *(of a person) to comply with something or someone*

adaptation [n1]	adaptation [n2]
act of adapting	condition of something resulting from change
adjustment, adoption, **modification**,	correspondence, acclimatization,
alteration, conversion,	accustomedness, **agreement**, **compliance**,
refitting, remodeling, reworking,	familiarization habituation,
shift, **transformation**, variation	naturalization
SEE CONCEPTS 697	SEE CONCEPTS 230
[STATES-CHANGE-ABSTRACT]	[CAUSES-ABSTRACT-STATES OF CAUSATION]

Figure 8.4: Contemporary usage of German verb *anpassen* from contemporary *Duden* (2013) and my English glosses; thesaurus entries for the two senses of *adaptation* are taken from Roget's Thesaurus (2000).

The interpretation of the selection of senses needs to be further augmented with an investigation of intra-lingual synonymy if the construction of a *rhetoreme* in a second language (which needs to precede a sense-evoking translation as the one above: "the only purpose of which is to be in *agreement* with the social and political powers that be") is its purpose. The synonym "*Angepasstheit*" which evokes the conventional sense (3a) with a negative connotation of "subservience" and "one-sided pliancy" indeed can be found and juxtaposed by running a concordance against the texts, whereby we also find the somewhat oxymoronic compound "*Anpassungswille*" (lit. *will to compliance*); these have been detected using *regular expressions*[20]:

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[19]It is noteworthy that we find the same problem relating to the term *"Lehre"* in a rhetoremic context; when Gehrke talks about theories in the sense of (2.3.3, § 2b), he uses the term *"Theorie"* to form compounds (*Systemtheorie, Kognitionstheorie*), whereas when he refers to his interpretation of Maturana's constructivism as a social Darwinist ideology (2.3.3, § 2a), the negatively connoted rhetoreme *"Soziallehre"* appears.

[20]By way of explanation, this is a formal expression composed of a string of characters interspersed with variables or *metacharacters* for which a variance in value (e.g. *ss* or *ß*) is accepted: "Regular expressions are composed of two kinds of characters. Characters with a special function [...] are called metacharacters, all other characters are called literals. [...] It can be useful to consider regular expressions in terms of natural languages, where by analogy literals are assigned the function of words, and metacharacters fulfill the role of a grammar. According to the rules of this grammar, words are combined so that the resulting sentence or clause becomes meaningful", Friedl, 2000, 4, my translation.

Hit	KWIC	File
1	t sind. Das erste Verhaltensgebot heißt folglich „Angepaßtheit", andernfalls droht diesem Denken zufolge „Zerf.	191205Waslei
2	n „basale Verhaltenskoordinationen" und schlichte Anpassung mindestens eine „strukturelle Kopplung". In seine	191205Waslei
3	he nur durch „strukturelle Kopplung" (was wir mit Anpassung, übersetzt haben, s.o.) herausgebildet werden.40	191205Waslei
4	e konstruktivistische Umorientierung steht, heißt Anpassung; indem das positivistische Kriterium der 'reinen'	191205Waslei
5	es und dem Geschmack des Massenpublikums so glatt angepaßt hat, daß sie die kulturellen Rationalisierungspro	191205Waslei
6	inblick auf den Radikalen Konstruktivismus einen „Anpassungswillen" ausmacht, „der vor nichts zurückschreckt"7(	191205Waslei
7	end lebt ein Organismus nur solange, wie er seine Angepaßtheit in dem Medium, in dem er existiert, erhalten ka	191205Waslei
8	er existiert, erhalten kann; und solange er seine Angepaßtheit erhält, hält er auch seine Organisation aufrech	191205Waslei
9	bende System existiert nur unter Erhaltung seiner Angepaßtheit und seiner Organisation, so daß die Erhaltung d	191205Waslei
10	m Zeitalter der Technologie. Selbstbestimmung und Anpassung, Vorträge des Germanistentages Berlin (1987), II,	191205Waslei
11	in faschistisches Gesellschaftsmodell unbedingter Anpassung propagiert, die Literatur ebenso wie die Literatu	wasleistetei:
12	sind. Das erste Verhaltensangebot heißt folglich ‚Anpassung', andernfalls droht diesem Denken zufolge ‚Zerf	wasleistetei:
13	elle Kopplung' „übersetzt" – (!) mit „schlichte Anpassung" (178), ohne auch nur mit einem Wort auf die komp	wasleistetei:
14	178) wie ‚Faktum', ‚Wirklichkeit', ‚Denken' oder ‚Anpassung' umbenennen.3 Aber radikale Konstruktivisten degr	wasleistetei:
15	Gehrke geht es radikalen Konstruktivisten nur um Anpassung –zugleich sind sie aber auch beherrscht vom „Will	wasleistetei:
16	tensiver für Kritik und Veränderung und gegen die Anpassung an die Herrschenden als der Radikale Konstruktivi	wasleistetei:

Figure 8.5: Concordance of two texts: search pattern `an++p*`, a *regular expression* comprising all possible spelling variants and compounds of the search term.

Here the most appropriate evocative translation of the suggested connotation would be *agreement* or *compliance* as senses of the (English) word *adaptation* [n2], an understanding which also seems to color the reception and affect of all instances of the (German) homonym *"Anpassung"*. This however would also function as technical term in the context of (literal) evolutionary theory and is therefore ambiguous.

However, the problem here does not actually revolve around the term *Anpassung* or *adaptation* per se but rather relates to the interpretation of a specific technical term of Maturana's, the adjective phrase *structural coupling.* It is only interpreted to mean "simple compliance" or (alternatively) "adaptation" [n2]. What is in evidence here is not so much a conflict of different concepts associated with a term that must ultimately remain irresolvable ((4.1.2), (5.3)) but rather an apparent conflict of *codification mentalities*, i.e. a disagreement as to what constitutes a legitimate terminological (and conceptual) formation in the first place. This can be constructed by interpreting the pieces of rhetorical discourse, i.e. by inserting the term in the appropriate context(s)[21]. Schmidt's riposte takes up the original argument by citation and adds the following *annotation fragment* in support of the counter-argument (4.2.2), an act by which he takes on board the entire critique of (constructivist) *term formation* practices:

> [Fragment 2.2] *Without any cogent argument, "structural coupling" is "translated"* (!) *as "simple compliance" (178) without any reference to the complex argument which underlies the use of the term by Maturana and other constructivists* [. . .] *Further, it is imputed that* [. . .] *radical constructivists* [. . .] *construct empty terminological shells to suggest complexity* [and] *use a convoluted style of speech to prevent them from being questioned on its actual content; generally, their terminology is more about appearance than substance, which prompts them to coin new terms for already existing and systematic introduced concepts such as "human sciences methodology", "fact", "reality" or "adaptation* [Ger. *Anpassung*]"
>
> Schmidt, 1996, my translation and emphasis

Here, reference is made to the tenets of our imputed "scientific" *codification mentality* and traditional (i.e. general language) terms that Gehrke might give credence to are used in a *contratextual* manner, whereby it is implied that these terms are not functional (a footnote to the last sentence of the fragment reads: "What might Gehrke's understanding of methodology be if he thinks that terms like fact, reality, etc. can be used as methodological terms?", ibid., my translation), but that the term *structural coupling* does represent a concept which Gehrke might have understood

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[21]We of course also regard the technique as effective for constructing the concept associated with a term, but only within the limits of personal *worldview construction* and discourse production.

if he had read the literature ("Whoever wants to critique attempts at developing specialist terminologies should at least have an idea of what it is they are talking about, or they should give some thought to where the supposed usage actually occurs", Schmidt, 1996).

8.2.2.4 Philosophical terminographic analysis

In the interpretation of the specialized terms as stipulated by this *codification mentality*, the means of using general purpose reference works is no longer sufficient; here, we must enter into the definition system of the discourse community. As noted, the present work has the expressed purpose of being an operational elaboration of some concepts that occur in the corpus of Ernst von Glasersfeld's writings, a different constructivist philosophical system from the one "on trial" in the debate.

However, thanks to the effort of volunteer philosophical lexicographers (5.2), we have at our disposal the following entry in which a definition for *structural coupling* is developed:

> Structural coupling is the term for structure-determined (and structure-determining) *engagement of a given unity with either its environment or another unity*. The process of engagement which effects a "...history of *recurrent interactions leading to the structural congruence between two (or more) systems*" (Maturana & Varela, 1987, p. 75). It is '...a historical process leading to the spatio-temporal coincidence between the changes of state..' (Maturana,1975, p. 321) in the *participants*. As such, *structural coupling has connotations of both coordination and co-evolution*.
>
> > "In general, when two or more plastic dynamic systems *interact* recursively under conditions in which *their identities are maintained*, the process of structural coupling takes place as a process of *reciprocal selection* of congruent paths of structural changes in the interacting systems which result in the continuous selection in them of congruent dynamics of state." (Maturana & Guiloff, 1980, p. 139)
>
> Phrased more succinctly, structurally-coupled systems "... will have an *interlocked history of structural transformations*, selecting each other's trajectories." (Varela, 1979, pp. 48-49)
> *During the course of structural coupling, each participating system is, with respect to the other(s), a source (and a target) of perturbations.* Phrased in a slightly different way, the participating systems *reciprocally* serve as sources of compensable perturbations for *each other*. These are 'compensable' in the senses that (a) there is a range of 'compensation' bounded by the limit beyond which each system ceases to be a functional whole and (b) each iteration of the reciprocal interaction is affected by the one(s) before.
> Whitaker, 1998, structural coupling, my emphasis

As can be seen, different *defining contexts* (2.3.4.1) are drawn together in the entry together with both interpretations and documentary data, although any particular example remains formally within the constraints of sentence-length. Interestingly, information on the connotation of the term is given, which likely represents the lexicographer's interpretation. The most prevalent characterizations here are conveyed by terms of interaction (*engagement, interaction, coincidence, reciprocal, congruence, interlock, each other*) which brings the encyclopedic definition of the term closer to the *lexical field* surrounding *adaption [n1]* (especially *modification, transformation*), even though this does not necessarily capture the intended reading of *co-evolution*

(i.e. that whatever organisms participate in *structural coupling* seem to modify their states mutually).

Here, it needs to be remarked that in the case of Maturana, the functional requirement of the philosophical terminology is more ambitious than most (in terms of attempts to naturalize philosophy, (3.3.1)), i.e. that the same terminology should apparently serve to describe actual biological phenomena as well as cognitive and social ones, which is likely why the terms are defined at a very abstract level, indeed. This has generated attempts at interpretation and critique elsewhere (Roth, 1987; Glasersfeld, 1990b). With regard to the present case study, the following can be noted.

If we discount the subversive/ rhetorical intent for the time being, (Ger.) "*Angepasstheit*" with the connotation of one-sided compliance (with all the negative affect that conveys) seems not to be a translation that fits the sense that is (tautologically) stated in the definition system, but neither does the more general (Ger.) *Anpassung* (or Eng. *adaptation*) without an appropriate modifier, such as (Ger.) *gegenseitige Anpassung* (Eng. *mutual adaptation*) or something similar.

This is relevant insofar as *structural coupling* was introduced into the discourse as an English term and (Ger.) *strukturelle Kopplung* needs to be seen as a *secondary term formation* (2.2). In any case, *adaptation* is also defined in the definition system and thus, within the frame of the (imputed) "scientific" *codification mentality*, the replacement of *structural coupling* with this synonym might lead to confusion and might thus be avoided by discourse producers familiar with the definition system.

As the case may be, the point is to model the different paths of interpretation through *schemes* (4) and *stereotypes* ((2), in this case between natural languages), so that they might be represented as something like Figure 8.6 (on page 245) if we assume that different attitudes to *term formation* are under the influence of *codification mentalities*. In this case, the figure expresses the different paths of interpretation relative to the expected term status of a unit.

As should be apparent, Figure 8.6 can be seen as a model that shows some overlap of both *text-world model* (4.2.2.2) and *discourse-world model* (4.2.2.2) and thus a competition of the *meta-schemes* of *scientificity* (3) and *disciplinarity* (6) on the *declarative* and *procedural* level (7). This might perhaps be *(proto-/ stereo-/ ideal-)typical* for meso-levels like sub-cultures with both indeterminate *agendas* (7.1.1) and *codification mentalities* (8.2.2.3) from the *middle-out perspective* (1.4.1).

The interpretation (4.1.1) is our own and based on our *theory of mind* (5.4.1.1) by which we intend to *simulate*[22] (see note on page 120) the *lexical fields* (5.4.2.5) and (mental/ cognitive) *semantic networks* (5.4.1.2) that the discourse- and information producers Gehrke and Schmidt *might* have used so that they can be taken as *prototypes* (1.3) for their respective disciplines as contexts[23].

Here it becomes apparent that if we read the diagram from the top down (which here corresponds to the *semasiological* perspective, (1.3.3)), we need to be aware of the intervening *secondary term formation* process (2.2) which transplants the *neologism* from its "native" English-language environment where its codified definition system resides (e.g. Whitaker, above) to a

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[22]We take it as axiomatic that this simulation should be empathic to the discourse producer, i.e. if sufficient evidence to induce a *codification mentality* or *agenda* is found, it should be used to adjust the model for belief/ non-belief in a "metalinguistic domain" of definition systems, etc.

[23]The resulting *reflective abstraction* from the best example can, in functional terms, either be seen as a *stereotype* or a *scheme*, see Main conclusion (page 246 ff.).

German-language discourse where that system may be fragmentary (the source cited by Gehrke is the German translation of one text found in Gehrke 1994, Footnote 10).

However, since the full extent of knowledge (or ignorance (4.2.2.2)) of a definition system or discourse is not formulated in the text, this must treated as *contingent* (6.1.2.1) on the explicit formulation; every other *semantic system* (5.4.2.5) to which the discourse producer's *discourse-world model* might have adapted (or to which it may be seen as *structurally coupled*) needs to be treated as *stratified* (6.1.2.2) and therefore *experientially complex* (6.2.1). Like the symbolic/ *syntagmatic* construct to be interpreted (the *texture*) itself, the interpretation is subject to *bias* (6.1.2.1) and *stereotype* (seen as a specific form thereof; (2.5)) as it must work on entirely *heuristic* means (6.1.2.1).

Our heuristic (which is admittedly biased[24] to a *pragmatic/ coherentist* idea of *scientificity*, an *instrumentally rational agenda* and the *scientific codification mentality* with some mixture of "Teutonic" and "Saxonic" intellectual styles that emerges from the very idea of "regenerative theory construction") is to take the explicit philosophical definition of *structural coupling* and the general (English-language) conventional meaning of "adaptation" as abstract state of change (Kipfer, 2000, adaptation, n1) as underlying Schmidt's (1996) interpretation, which is however *only insinuated* in the riposte.

In this sense, the (less sentiment-connoted) German homonym *Anpassung* may fit the term *structural coupling* as an interpretative translation if (and only if) the person constructing information is both in possession of the metaphorical *paradigmatic* "code list" (3.5) and if their *agenda* entails a belief in the definition-driven mechanism of constructing a technical language[25], i.e. if they are willing and able to supplement the properties of "interaction" and "communication" or if they do not care either way (an unlikely contingency in a philosophical context).

If this is not taken for granted, then the *connotation* of (Ger.) *Anpassung* as (Ger.) *Angepasstheit* may well be substituted against the background of a *contratextual* argumentation, especially if the according parameters of *scientificity*, and *agenda* come together in a sub-(sub-)culture-specific gestalt of *disciplinarity* which can be under the influence of *stereotypes*, as has been discussed in the critical review of Gehrke's text.

Providing that the intellectual styles conjecture (8.1) is accepted as a *heuristic*, the reaction to such interpretations will be more or less intense given the priorities of the discourse participants; if the term (or its interpretation) are seen to go against the grain of its intended function in a philosophical system, this can be a potential source of conflict as it may call into question some important value and therefore threaten the *coherence* of a philosophical system as a whole[26].

This becomes apparent if one considers that Schmidt (as most constructivists do) sees radical constructivism as a *worldview* that contains both *epistemic*, *praxeological* and *axiological* components, whereby the latter is seen to exclude (Ger.) *Angepasstheit*, or "compliance with the powers that be" as a positive value:

> Maturana has suffered many years under the rightist dictatorship of Pinochet, while E. von Glasersfeld had to flee from the Nazis to Ireland and Australia. There is

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[24]Recognizing and critically reflecting this form of (cognitive) *bias* is the function of *worldview construction*. It will not lead to objectivity, but might yield more viable *heuristics*.

[25]This belief need not be absolute, i.e. from the axiological perspective, not every attempt to facilitate *intersubjectivity* by using formal ways of expression should be equated with an attempt to construct a "totalizing metanarrative" out of reflex. Whether this is indeed the case for Maturana's version of constructivism should be left to someone more knowledgeable of his philosophical system.

[26]This of course is only of relevance *if* such coherence is valued in the larger cultural context

> hardly any philosophical program that makes a more intense appeal for criticism of the status quo and change and therefore against compliance with the ruling powers [Ger. *die Herrschenden*] than Radical Constructivism. Perhaps Mr. Gehrke might want to read H. von Förster sometime. His defamation are groundless and only show which attitudes their author represents.
> Schmidt, 1996, my translation

At this depth of the discussion, we have however long crossed over into the (arbitrary) sub-category of sub-sub-culture, which might be recognized by the appearance of considerations that more appropriately belong to the *scheme-level* of *text-world model* and *discourse-world model* as it has been previously characterized ((7), introduction).

As we have treated two *codification mentalities* and *agendas* within the same *topic*, our observations were really on different schools of thought characterized by the adoption of *mentality* and *agenda* expressed in attitudes towards communication and terminology and exemplified in the comparative case study of a polarized debate from which the points in question have been extracted and described.

The case study would therefore lead us directly from the two cultures conjecture to a discussion of sub-sub-culture or "scholasticism" (8.3), which is the implication in, e.g. this fragment. Its argument suggests an infinite depth of further differentiation as opposed to the simplified dichotomy of the "two cultures". While apparently addressing the emergence of specialties (which in our ordering matrix correspond to sub-cultures, not to sub-sub-cultures), the analogy of "linguistic drift" and "dissociation" (compare (6.2.2.1)) can be seen as the central feature there:

> The historical differentiation of particular disciplines from the collective conception of science [Ger. *Wissenschaft*] (which was also valid for the English *science* until the 19th century) can be seen as a process of cultural dissociation, not dissimilar from that depicted in the myth of the tower of Babel. Analogous to the dispersal of peoples after building of the tower, the dispersal of disciplines is characterized by linguistic drift. [...] The "two cultures " thesis of C.P. Snow (compare Kreuzer 1987) is to be revised in the regard that we can maximally assume the existence of not only two, but several hundreds of scientific cultures. The difficulties of entering into interdisciplinary dialogue can therefore be construed as a translation problem. In the minimal reformulation of the thesis, we should assume hundreds of scientific subcultures which still belong to a larger scientific culture unified in a common epistemic interest and ethos (compare Weinrich 1993b, 125f; Kretzenbacher 1994 b, 171 f).
> Kretzenbacher, 1998, 138, my translation

To stretch the language analogy further and incorporate the objective of discourse production (4.2.2), an understanding of the "disciplinary babel" will require at least the working grasp of many "grammars" and "vocabularies" that forms the *scheme* of *discourse-world model*, and whose larger abstraction can be considered the full model of (*declarative* and *procedural*) *disciplinarity*.

As was demonstrated, *connotations* (7.1.2) and *rhetoremes* (and therefore the indicated possibilities of information construction, or rather the contexts that constrain it) may differ in texts which apparently contain the self-same *syntagmatic* forms or *retronyms* (2) through the use of contratextual strategies.

Once the philosophical terminographer's *text-world model* (4.2.2.1) and *discourse-world model* (4.2.2.2) (and by extension their *meta-schemes* of *scientificity* and *disciplinarity*) have *assimilated* (see definition/ discussion of *assimilation*, on page 101) and/or *accommodated* to (likewise, on

page 101) these *perturbations* (see definition/ discussion of *perturbation* on page 99), inferences should in theory be possible with regard to

1. smaller pieces of text,

2. less well known or unknown contexts,

3. the capability of inverting the above process, i.e. of reasoning from term to context and thereby testing hypotheses about de-/ connotation and associated constructs,

which in turn should have the *regenerative* effect of expanding the range of phenomena that can be *recognized* (see definition/ discussion of *recognition*, on page 65) or *re-presented* (see definition/ discussion, on page 65) in discourse production (4.2.1), which can be seen as being complementary to their evaluation in *worldview construction* (4.2.2).

The next case will be term-centric and treat the issue of the term (as well as the phenomenon of) *"scholasticism"*, which might function as a technical term *or* as a *rhetoreme* depending on its context (rather than its co-text). This might give an indication of the *discourse-world model* or *text-world model* needed to construct the surrounding *texture* in terms of sub-sub-culture and thereby extract and "recycle" its parts for the purpose of *philosophical terminography* or *regenerative theory construction*.

8.3 Scheme level: sub-sub-culture

What should we understand by a sub-sub-culture? By practical example, we could take "schools of thought" such as those supposedly absent from *terminology research* as an example and track them by their label *as if* we were working from a *philosophical classification* (6.2.2.1). The starting point here would be philosophical schools like historical-critical hermeneutics and radical constructivism, such as we have found implicated in the above context of sub-culture.

This is however likely to produce exactly the type of stereotypical discourse that we have presented above, as individual differences tend to be overridden in the use of labels; there would also be no *syntagmatic* pattern on which our explanatory and predictive *text-world model* and *discourse-world model* could be based and which we might assimilate to our *schemes* of *scientificity* and *disciplinarity* ((4.3);(7, Introduction)).

It stands to reason to assume that individuals formally associated with one "school" or the other may constructs terms and *arguments* that are at variance with those of others, because the conceptual content is necessarily of their own construction (4.1.1), so that the indication of sub-sub-culture may be seen to lie in the way that the arguments, and especially the terms in such contexts are constructed. In order to induct them, we could activate the concept of *scholasticism* in a contrastive manner in order to derive the operations to adjust the *schemes* and *meta-schemes* to the sub-sub-cultural context.

The term *scholasticism* can be seen as a homonym that depending on its context seems to function either as technical term, *retronym* or *rhetoreme* and which therefore can be used as an example to demonstrate as well as designate the interpretation of the phenomenon.

8.3.1 Historical scholasticism

As can be seen here, the connotations of *scholasticism* are situated in time (6.2.2) rather than synthetically generated, and hover between a merely descriptive term for a historical period (7.1.1.2)

and an *affect word* bordering on anti-intellectualism as seen in previous examples (Bourdieu, (7.1.1.2)):

> **Scholasticism** n
> 1: the system of philosophy dominant in medieval Europe; based on Aristotle and the Church Fathers
> 2: orthodoxy of a scholastic variety [syn: scholasticism, academicism, academism]
> Wordnet Contributors, 2010, scholasticism

Historical scholasticism seems interesting insofar as we can perceive the origins of *conventions* and *taboos* inherent in *codification mentalities* in terms of their purpose, insofar as they could be construed as *auras* (see note on page 158) of rituals (Pavel, (6.2)) that have their origin in the period in question (compare medieval discourse production, (4.2.2), figure (4.2)). In terms of features of the *codification mentality* of historical scholasticism, the following fragment (taken from a diachronic lexicological study on medieval medicine) gives some indication of characteristics, which contrasts empirical and scholastic discourses as forebears of both *agendas* and *codification mentalities*:

> Beside communication and representation, language is used to construct ideology. The work by the Scientific Thought-styles project at the University of Helsinki shows that *linguistic features typical of scholasticism and empiricism are very different from one another, reflecting the underlying methodology and philosophy of science.* The kinds of evidence for scientific knowledge varies: *scholasticism* is *logocentric* and texts accordingly rely on *quotative evidence* seen in their *frequent use of speech act verbs of saying*; in contrast, empiricism is based on *observation*, with *sensory verbs of perception predominating*
> Taavitsainenen, 2006, 209/ 210, my emphasis

Here, we could induct that the presence of quotative evidence and verbs from the *lexical field* (5.4.2.5) of *saying* that can be associated with a particular network of people and institutions, and therefore the construction of declarative disciplinarity as previously explored in ((6.2.2.2.3), figures (6.5),(6.6)) appears a still viable indicator of sub-sub-culture insofar as specific configurations can be recognized in *synchronic* or *short diachronic* collections of texts or their parts[27].

As for the modern, mostly derogatory use of the term (below), this preference for quoting others over observation seems to be associated today with the practice of *perfunctory citation*, defined as "citations [...] present [...] only because they [...] mark affiliation and show with which group of scientists [the author] identifies" (Latour, 1987, p. 34) which can now be seen as a pathway for transporting terminology necessary for authorization, establishment of consensus and the recognition of insider status (Beaugrande, (8.2.1.1.2)).

8.3.2 Scholasticism as rhetoreme

The term *scholasticism* can therefore be seen to function (potentially) as a *rhetoreme* (8.2.2.2).

Concerning the phenomenon of supposed contemporary scholasticism in a subject-specific context, the following should be noted: given that in "philosophy [...] values and standards are usually less firm and clear [...] than in science" (Floridi, (6.2.2.2.3)) and that in linguistics "the

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[27]In contrast to the above debate, whose tenor alone suggests that exchange might have been a one-off. *Scholasticism* or sub-sub-culture, on the other hand, should rather be seen as a tppos where affiliations and affinities appear and thus contexts are constituted.

viewpoint [...] creates the object" (Saussure, cited in Beaugrande, 1993, § 1.1), both statements can and have been extended to any discipline on this spectrum of linguistic self-constitution, which would comprise most of the disciplines and labels occurring in the text of this chapter.

The elements (terms, phrases, fragments, etc., see Main conclusion) of the text to be categorized have been witnessed to be perceived in stereotypical frames (8.2.2.2) with regard to their scholastic or sub-sub-cultural provenance, apparently by necessity, since none can have in-depth knowledge of every (personal) *worldview* whose traces can be encountered even in limited *topic* (6.2.1), and being a hypothesis on the *paradigmatic* spectrum, this *worldview* could only be partially modeled by methods of interpretation in any case. For all practical purposes, the model arrived at in this way constitutes the object from an interpreter's point of view (4.1.2).

8.3.2.1 Negative sentiment

Of course it would seem possible to use discourse elements as data to make observations on, as is stated in the design of this study (1.1.1.3), but such methods require, as has been seen, considerable formulative and heuristic effort in and of themselves and develop in a process which as unpredictable as its success is uncertain, so that the likely convention for using the sub-sub-cultural production of discourse artifacts might be seen as somewhat closer to this characterization laced with negative *affect*; note that under consideration for the *syntagmatic* and *paradigmatic* aspects of (sub-sub-)culture (1.1.1.1), the description could be seen as one of the *emergence* of a sub-sub-disciplinary special language and its terminology:

> In the course of its evolution, the process of systematization gradually leads to a temporal fixation of the constructive conceptualization of reality into a worldview, which then generates a conservative closure, scholasticism [...]. Scholasticism, understood as an intellectual typology rather than a scholarly category, represents the **inborn inertia** of a conceptual system, when not its **rampant resistance to innovation**. It is institutionalized philosophy at its **worst** – a **degeneration** of what community or group of philosophers. It manifests itself as a **pedantic** and often **intolerant** adherence to some discourse [...], set by a particular group [...], at the **expense of alternatives**, which are **ignored** or **opposed**. *It fixes, as permanently and objectively as possible, a toolbox of philosophical concepts and vocabulary suitable for standardizing its discourse (its special isms) and the research agenda of the community. In this way, scholasticism favors [...] the application of some doctrine to its own internal puzzles* [...] Scholasticism is **metatheoretically acritical** and hence reassuring. *Fundamental criticism and self-scrutiny are not part of the scholastic discourse, which, on the contrary, helps a community to maintain a strong sense of intellectual identity and a clear direction in the efficient planning and implementation of its research and teaching activities.* [...] This is the road to **anachronism** [...] Scholastic philosophers become busy with **narrow** and **marginal** disputationes of detail, while *failing to interact with other disciplines, new discoveries, or contemporary problems that are of lively interest outside the specialized discourse.* In the end, once scholasticism is closed in on itself, its main purpose becomes quite naturally the perpetuation of its own discourse, transforming itself into academic strategy [.]
> Floridi, 2004, my emphasis

Used as *rhetoreme* in this fashion, the term *scholasticism* might be mobilized against any form of conventional *codification mentality* – in particular the "scientific" one, which entails relying on a system of definitions (8.2.1.1.1) – but here its target are rather what Floridi sees as ossified *agendas* (e.g. in terms of the examples given by Vidal, (7.1.1)), which are seen as a road to

regression (6.2.2.2) for any particular specialty and/ or sub-sub-culture (6.2.2). This fragment needs to be situated in a *synchronic* perspective, as it makes no reference to socio-historical *contingencies* at all.

Interpreted from the perspective of *scientificity* (3), it can be seen as an oblique critique of *foundationalism* (3.2), where, in our interpretation, some basic premise (which must be formulated linguistically) is invented, *imported* (3.3.1.1), or *borrowed* (3.3.1.2) from some authority and to which everything else is then made to conform, while all those who wish to be "insiders" in the school are expected to conform to the premise. Here, appeals to consensus can be seen as indicative of sub-sub-cultures and their *agendas* (Hunston, (7.1.2)).

Given our second case study, rigid intra-sub-sub-cultural phenomena may be motivators of the style of confrontation, whether under the influence of intellectual styles (8.1) or not.

It also suggests a metaphorical image of *disciplinarity*, which, if the "topical landscape" is seen to be populated with orderly "scholastic settlements", would approach the ideal of the timeless *philosophical classification* (6.2.2.1) in which the "address" at which every one of the schools "lives" would be registered (with a complementary metaphorical image of cultures as "quarters" of e.g. a "city" and the sub-sub-cultures as "tenement blocks").

8.3.2.2 Positive sentiment

However, the phenomenon of historical scholasticism is sufficiently remote in time and culture to offer a plane onto which any kind of interpretation can seemingly be projected (7.1.1.2); note that the following fragment not only contains a positive *sentiment* with regard to scholasticism, but that this is transported entirely by means of quotation, i.e. verbs from the *lexical field* of saying or related fields (*think, say, characterize, suggest, caution*):

> Peirce **does think** that in the sciences after a certain point there is a kind of agreement or an indubitability that a theory achieves practically: "In sciences in which men come to agreement, when a theory has been broached it is considered to be on probation until this agreement is reached. After it is reached, the question of certainty becomes an idle one, but there is no one left who doubts it" (5.265). The question of agreement for Peirce is not completely separate from questions about how arguments provide conclusiveness. *He* **says** *the scholastics had "**multiform argumentation**," which he contrasts with "a single thread of inference depending often upon inconspicuous premises" (5.264). Modern philosophy to its detriment follows the latter approach to argument, while* **modern science is more akin to medieval scholasticism**. *Peirce* **characterizes** *the scientific community's experimental approach as "to* **trust rather to the multitude and variety of its arguments** *than to the conclusiveness of any one" (5.265). Peirce* **suggests** *that the reasoning of philosophy "should not form a chain which is no stronger than its weakest link, but* **a cable whose fibers may be ever so slender, provided they are sufficiently numerous and intimately connected**" (5.265).14 Peirce remains, however, a fallibilist; he **cautions** against absolute certainty (based at least in part on his conclusions about the nature of induction).
> Mullins, 2002, 205/206, my emphasis

Nevertheless, the argument is remarkably similar; Peirce's interpretation of *scholasticism* as "multiform argumentation" and "numerous and intimately connected" premises or arguments resembles the description of *coherentism* (3.3.3) as *ideal type* of *declarative scientificity* ("every belief derives some of its justification from other beliefs [. . .] All coherentists hold that, like the

poles of a tepee, beliefs are mutually reinforcing", Routledge Contributors, (3.4)) which is again an image that is contrasted with *foundationalism*, imagined as "the chain which is no stronger than its weakest link" (3.2). This fragment makes actual reference to a *diachronic* time-span (1.3.2).

Both fragments give the impression that the question of sub-sub-cultural organization can largely be seen as a question of *ideal-typical* or *declarative scientificity* (3), but this gives away the fact that either has originated in philosophy *itself*, where such questions would seem to form a *preferred* topic of discussion.

Experiential sub-sub-disciplinarity may more often take the form of debates like the one presented above in some detail, and therefore would need to be approached from the *sociological imagination* (2)/ *theory of mind* (5.4.1.1) point of view with attention to *paradigmatic agenda* (7.1.1), and *experiential complexity* (6.1.2) as well as to *syntagmatic texture* (3) and *codification mentality* (8.2.2.3), whereby formal criteria and methods may be used to amplify the interpretative process.

As neither heuristic category we might be able to offer is clear-cut, an interactive approach to both *concept analysis* (1.2.2) and *philosophical terminography* ((4), (5)) can be seen as a *sine qua non*, and taking a leaf from Floridi's fragment, the most interesting empirical/ conceptual *cognitive interests* are often those that defy their reduction to "scholastic" terms (3.3.2).

Nevertheless, if we extrapolate these observations to a *heuristic* of how we might *recognize* sub-sub-disciplinarity or "scholasticism" in *syntagmatic* terms, and therefore arrive at a *scheme* for *philosophical terminography* that allows using smaller pieces of text in less well-known or unknown contexts and therefore forgoing in-depth information construction, we might arrive at a schema like this:

1. recurring configurations of people and institutions;

2. verbs of saying;

3. appeals to consent or statements of similar interest;

4. negotiation of retronyms, in relation to (1)

Of course, this is to be applied in conjunction with awareness of *agenda, codification mentality, definition strategy* and *texture*, which would give us the *scheme* of *text-world model* (4.2.2.1).

The modeling level of sub-sub-culture is therefore a heuristic for phenomenological distinction that partly relates to the *temporal dimension* (6.2.2) and the *diachronic* aspect (1.3.2) of traditions (and their rejections) in both *syntagmatic* and *paradigmatic* terms rather than to the aspect of *agenda* on the level of sub-sub-culture, although sub-sub-cultures express *sentiment* to one *agenda* or another; as noted, the model appears to be *heterarchical* and the distinction of levels only serves to orient.

Concretely, it provides orientation to discursive phenomena that seem to occur in groups *within* both a larger culture and scientific sub-culture that cannot be differentiated other than by recurring patterns in the *texture* relating to *named entities* (indicating affiliations) and clusters of terms associated with *immaterial objects* derived by similar phenomenological operations (7.1.2.2), an observation that is to be developed in the following.

8.3.3 Heuristics for sub-sub-disciplinarity

This stated, the most often encountered and at the same time least characterizable form of sub-sub-cultural differentiation is the distinction between "modernism" and "postmodernism", which might be seen as a dichotomy that evokes both the "multiform" and "perfunctory" gestalt of scholasticism by means of the form in which it is syntagmatically formulated even across remote, "unrelated" texts.

It has previously been construed in what in our terms would be the distinction of *agendas* and *codification* mentalities (Budin, 2007a, Heylighen, Cilliers, and Gershenson, 2007), whereby the focus there rests largely on the questions of communication and rationality (Budin) and the idea of boundaries, difference and the human subject (Heylighen). Both authors seem to agree that "modernist" science and "postmodernist" philosophy have seen a mutual rapprochement with the former's turn to complexity theory and non-linear thought (6.2.2.2.3), most notably under the influence of contemporary information technology.

With regard to *term formation* as a function of *codification mentality*, we can observe a preference for *structural metaphors* on the postmodern end, while literal coinages are still in evidence with regard to the "modernist" example; regardless of this, the constant element between the following fragments seem to be the *named entities* (the personal *prototypes* of the philosophers: Deleuze, Guattari, Lyotard):

> *[M]etaphors have been used or even created in* **post-modernism: labyrinths, networks, and the famous 'rhizomes' (by Deleuze/Guattari 1976)** *[...* While in modernists science,]* ***complexity*** became a crucial category in scientific research. These developments have led to a 'theory of ***nonlinear complex systems'*** (Mainzer 1996) that includes an interdisciplinary non-reductionist methodology of mathematical modelling of ***complex*** phenomena [...] ***Nonlinear thinking*** implies ***multi-causal explanations***, the modelling of ***irregular*** and ***chaotic processes***, ***bifurcations***, ***dissipative self-organization***, and the sudden ***emergence*** of order in ***dynamic systems***.
> Budin, 2007a, 57/58, my emphasis

Neology within the preference of the respective *codification mentality* seems to be a characteristic of both; the emphasis on diversity and its discursive forms have already seen some consideration in (7.2), together with an example that could now be characterized as "postmodern" on account of our schematic; here, verbs of saying also occur (*characterize, call, interpret*), although this in itself may be considered *underdetermined* (14) as a defining criterion:

> Modernism can be ***characterised***, in **Lyotard**'s words **(1988: xxiv)**, as a search for a single coherent **meta-narrative**, i.e. to find the language of the world, the one way in which to describe it correctly and completely. This can only be a reductive strategy, something which reduces the complexity and the diversity of the world to a finite number of essential features. [...] **Lyotard's (1988)** *characterisation* of different forms of knowledge, and his insistence on *what he* ***calls*** "**paralogy**", as opposed to conventional logic, is similarly an acknowledgement of the complexity of the postmodern world [...] An innate sensitivity to complexity is also central to the work of **Deleuze and Guattari (1987; Guattari, 1995)**. Many of their **post-Freudian** insights, and especially the idea of the "**rhizome**" deny reductive strategies. Their work has also been ***interpreted*** specifically from a complexity perspective (DeLanda, 2005; Ansell-Pearson, 1999).
> Heylighen, Cilliers, and Gershenson, 2007, my emphasis

With reference to the positive *sentiment* regarding "multiform argumentation", postmodernism could be considered "scholastic" in this regard, while the affirmative emphasis on the diversity of phenomenologies and terms (compare the idea of *discursive multiverse*, on page 101) may explain the diversity of expression forms (synonymy would imply that they denote a common concept, and therefore appear *modern* rather than *postmodern*) in what can now be considered our *best exemplar* of postmodern *texture*, a fragment by Watson-Verran & Turnbull on page 193. It stands to reason to conjecture (especially against observations on texts such as Ashmore, Myers, and Potter 1995) that resistance against the adoption of a rigid c*odification mentality* would also be apparent in the entire *texture* of some of the products of this sub-sub-culture:

> ... I'll start it with my Plan for the Week just to let you know right away what's going on. [... B]ut before we can start I must explain why I have written this "review" in the form of a "diary." (Why the accredited authors of this piece are three men, while I am' not, must wait until the end to be fully explained.) I have four very specific reasons for foregrounding "form." First, studies of discourse and rhetoric have broken down easy distinctions between form and content as well as ***showing the historical contingency and rhetorical orientation of the literary genres used in technoscience.*** The form of science writing has thus been made problematic. It is not just a matter of how it is put; the it is mixed up with the putting. This can, of course, simply be said, if not said simply. ***How much better, then, to show the mutual constitution of form and content in a form that, through its unconventional character, makes it visible.***
> ibid, 321/322

Here, the stylistic violation of *taboo* is used as a *heuristic* in order to draw attention to the *codification mentality* and its context itself. It starkly contrasts the form of the earlier fragments (both Budin and Heylighen espouse positions in their respective papers that can be seen to align with the rational complexity-oriented philosophy of information, (6.2.2.2.3)) and points to the observation that a simple *heuristic* in the form of *text-world model scheme* cannot have a *nomothetic* quality. This conclusion also extends to fragments that fit the characteristics in terms of *syntagmatic* form, but not in terms of *agenda* (situated on the modeling level of sub-culture).

In support of this observation, we submit a sample from the discourse of radical constructivism which will be examined for characteristics of postmodernism, following Gehrke's diagnosis of (negatively connoted) "*post*-modernism" in the second case study.

Applying our sub-sub-disciplinarity *heuristic* or *text-world model* now calibrated for a modernism/ postmodernism dichotomy to the analysis of sub-sub-cultures at this deep a level of "nested" phenomena can be seen to produce deceptive results if only *syntagmatic* forms is evaluated, i.e. if one supposes that a "multiform" argumentation involving the negotiation of meanings between varying configurations of *named entities* representing scholars or texts or a common tradition ("school") is taken as an indication of postmodernism, as in the example already mentioned ((7.2), Watson-Verran and Turnbull):

> What Murana [sic!] ***calls*** "***operational effectiveness***" corresponds, in my constructivist perspective, to ***"viability"*** and coincides in the history of philosophy with the ***slogan*** launched by the Pragmatists at the turn of the century: "True is what works". Maturana's "***operational effectiveness***", however, is more successful in its application than the Pragmatists "***functioning***". All operations and their effectiveness, ***according*** to Maturana's definition, lie and must lie within a domain of description that is determined by the distinctions the particular observer has made.

> The generalized "***functioning***" of the Pragmatists, in contrast, fostered the temptation to look for an access to an "objective" world, on the basis that certain ways of acting "***function***", while others do not. Maturana's model thwarts any such temptation in the bud, because it ***makes clear*** that "***effectiveness***" is a judgement made within a domain of experience which itself was brought forth by an observer's activity of distinguishing.
> Glasersfeld, 1990c, my emphasis

Arguably, the fragment has all the hallmarks the *text-world model stipulates*, i.e. a configuration of like-minded scholars (*Glasersfeld, Maturana, the Pragmatist school of philosophy*), a diversity of terms under negotiation (*functioning, viability, operational effectiveness*) and verbs of saying (*call, slogan, according to, makes clear*); yet, the author elsewhere dissociates himself from the categorization "postmodern":

> What I have presented here is the view of an individual that no longer wants to have anything to do with the "postmodern" movement. A couple of decades ago it seemed to me an acceptable epithet for radical constructivism because it advocated breaching with *the traditional notion that reason is a means of access to objective knowledge of reality.* But I did not understand it as an "emancipation from reason" (***Luhmann***, quoted in Schmidt & Spieß 1995, p. 231) ***The model I am suggesting is, in fact, a theory of rational knowing.***
> Glasersfeld, 2008b, 64, my emphasis

Here, it is noteworthy that even postmodernism may become used as a characterization in a *stereotypical* manner ("Note that this term [postmodern; PBN] should be used with caution. It can refer to a very wide range of positions, sometimes pejoratively and sometimes merely as a *verbalism*", Heylighen, Cilliers, and Gershenson, 2007. We may interpret "verbalism" as a function of *perfunctory citation.*); when radical constructivism is characterized as "*post*-modern" (see Gehrke, above), this seems to be a function of *subject stereotype* applied as a heuristic to simplify the *experiential complexity* engendered by the necessity to survey a "wide range of positions".

Here, we might differentiate by starting from the *syntagmatic* form (i.e. *semasiologically,* (1.3.3)) and use our interpretative method of "context insertion" (4.1.2) to establish Glasersfeld's position vis-a-vis *stereotyped postmodernism* by exercising our *meta-schemes*; from the fragment discussing alternative designations for *functioning*, we induce that the sort of rationality that cannot be relinquished for "a theory of rational knowing" can be read as the goal-directed *instrumental rationality* (7.1.2.1) motivating the Glaserfeld's theory of *phenomenology* (7.1.2.2), whereby "coherence decreases" (Beaugrande, (3.3.3) given the stated rejection of "reason [as] a means of access to objective knowledge of reality" with the simultaneously upheld contention of producing a "theory of rational knowing", which could be interpreted as a "totalizing metanarrative"; however, the *coherence* of the claim increases again if we include the respective attitude to *subject*, which seems to have been already implicated in Gehrke's contratextual fragment (fragment 1.1).

The idea of *subject* in psychology and sociology is a complex issue beyond the discussion possible in this work; it is commonly differentiated against the idea of *selfhood*, which can be seen as *contingent* on the historical development of the idea from (Roman) antiquity forward and as particular to the Western context (Cassano, 2008, pp. 194/195). Gehrke's reception of *subject*, which he associates with an unspecified "Enlightenment" *prototype*, is already a particular

interpretation of the idea (ibid.) which found resistance in the broad post-modernist sub-sub-cultural spectrum due to its "essentialist" reception:

> Rather than positing a **disembodied, essentialist, and metaphysical "subject,"** the task poststructuralist and postmodern thought has set for itself is to deconstruct all essentialist conceptions of the subject in order to investigate the concrete relations and discourses that create different ***historical forms*** of ***embodied subjectivity.***
> Sandywell, 2008, 197, my emphasis

Amplifying on and qualifying this *agenda*, Heylighen notes, again with regard to possible commonalities between the constructs of postmodernism and complexity research that:

> The Enlightenment idea of a **self-contained**, **atomistic subject** is undermined in similar ways by complexity theories and postmodernism. *Nevertheless, the idea of the subject cannot be dismissed.* Notions of ***agency*** and ***responsibility*** remain extremely important, but they have to be supplemented with insights from theories of **self-organisation** and **social construction**.
> Heylighen, Cilliers, and Gershenson, 2007, my emphasis

Comparing these characterizations to the hypothetical entity that is supposed to exercise rationality by "making distinction" in a "domain of descriptions" which is ultimately thought to result from its own self-distinction as a phenomenon, we may apply a distinction between the "metaphysical" subject characterized by *being* (compare our analysis of the definition of *ontological* vs. *experiential complexity*, (6.1),(6.3)) a "disembodied", "self-contained" and "atomistic" "essence" (which could be seen as a *de facto* paraphrase of the elusive German (anthropological) *thick concept* (1.1.1.2) *Geist* that repeatedly appeared in the debate (8.2) and has conventionally been translated as *spirit*[28], and the *phenomenon* of "embodied subject", which is *experienced* as capable of "agency" and "responsibility" (compare *observer autonomy* as *axiological* dimension, (7)), situated in experiential time ("historical") and may be phenomenologically described in terms of "self-organization" and "social construction", whereby it recurses to the metaphysical conception, given that it might be this conception that is a possible (i.e. *contingent*, (6.1.2.1)) *result* of the *process* of social construction[29].

Perhaps due to this intrinsic complication that emerges from a *paradigmatic analysis* of the concept, Glasersfeld abstained from strong views on the *metaphysical* ***subject*** and restricted the scope of constructivism in this regard to a hypothesis about the so-termed ***experiential self*** as it appears in rational reflections that are of its own making:

> In the constructivist view, the ***self we conceive, as well as its body***, are necessarily the product of that active agent that Wittgenstein called the 'I' that is not part of the world. Whatever the other-worldly part of the self builds up is gauged according to its viability in experience. Thus there is a rather straightforward way to approach ***the component of the self-concept that is part of the experiential world***. Instead of asking what the self is in the philosopher's sense, ***one can ask how we experience our self.*** This does not concern the mysterious entity

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[28]e.g. "Where the "natural science" model aspired to uncover objective laws, the "human sciences" foregrounded the "***spirited***" realms of human action, conscious agency, and the intentional life of singular individuals embedded in particular historical contexts", Sandywell, 2008, 196, my emphasis.

[29]"In contrast to the self, regarded as a stable human essence and the controlling center of its own actions, the subject in contemporary critical theory is conceived as at once active and passive, and as the product of its inscription in language, politics, and culture", Hoogland, 2008, p. 198

> that does the experiencing, but focuses on the **tangible structure, the body that is experienced as one's own.** Such an investigation takes the mysterious self-conscious entity for granted and proceeds to **examine how that entity comes to recognize itself both as agent and as percept distinguished from the rest of its experiential field.** [...] **As to the concept** of self, constructivism – **as an empirical epistemology – can provide a more or less viable model for the construction of the experiential self; but the self as the operative agent of construction, the self as the locus of subjective awareness, seems to be a metaphysical assumption and lies outside the domain of empirical construction.**
>
> Glasersfeld, 1995, 123, my emphasis

On the strength of this observation, the *coherence* of the claim increases again, given that on this perspective, the idea of (instrumental) empirical rationality and *experiential self*, which includes the idea of *embodiment* (1.4.1), are mutually constitutive (one could say *structurally coupled*) within the *texture* that partially expresses these hypothetical *worldview* components associated with the terms.

However, the exercise of a *discourse-world model* (4.2.2.2) as *scheme* is apparently necessary to bring forth this description, since the elements required in the *syntagmatic (discourse) analysis* are "scattered" between the texts from which they were extracted, and need to be combined in a new discursive artifact, which in turn requires the exercise of the *scheme* of *text-world model* (4.2.2.1) for their assembly in a philosophical terminographic record or text.

In the process of executing the operations taken to be "encoded" by the *scheme* (4), the *meta-schemes* of *scientificity* (3) and *disciplinarity* ((6), (7)) could also be taken to become modified, both in terms of *declarative* and *procedural* content (4.3), by which *worldview* (that can now be associated with the *conceptual system* of the *experiential self*) may undergo change in terms of its components of "ontology[30]" and "epistemology" as it may now have developed a means of *simulating* (see note on page 120) the *acceptability* (3.5) and/ or *appropriateness* (2.5.5.4of some more terms (e.g. *self, subject*) in an experiential context (6.2) of apparent postmodernism[31], or of modernist discourses that have been characterized at more abstract modeling levels ((8.1), (8.2)), perhaps also in a *stereotypical* fashion.

This much can be said for *philosophical terminography* as *worldview construction*, which, as noted, happens as a necessary side-effect (4.2.1) of practical *language engineering*. Related to the frame of reference of *philosophical terminography* as discourse production (4.2.2), we might as well reformulate the results of the *interactive concept analysis-by-synthesis* (1.4) in the form used as example at the beginning of Chapter (4), where the more general term "subject" might be used as a synthetic *retronym* to lemmatize (or "terminate") the record. The analysis of the *syntagmatic* form of the fragments selected may *regeneratively* contribute to the "amplification" of the theory construction effort by helping to refine complex search patterns which can attract more fragments fitting the specified characteristics (see explanation of *regular expression*, on page 224, which from a cognitive point of view are based on *heuristics*, see definition of *heuristic* (6.1.2.1)).

Ultimately, the differentiated view of culture (1.1.1.1), seen as perceived and/or modeled as a

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[30]i.e. *theory of mind* (5.4.1.1), *sociological imagination* (2))

[31]here, e.g. the philosophy of complexity/ information (6.2.2.2.3) that may perhaps be characterized as a *post-postmodern* form of "postmodernism", with some caution regarding the emergent stereotypical *bias* (6.1.2.1) revealed in this exercise

rhizome heterarchically pervading the modeling strata of culture, sub-sub-culture and sub-sub-culture down to the level of "idio-culture" (Floros/ Gerzymisch-Arbogast, (7.2)) can also be seen as a contribution to the form of *operational concept analysis* that is seen to produce hypotheses on the *a priori schemes* used in the context of practical terminology and thus as closing the conceptual circle of the *formulation problem* set out at the beginning of the work (compare Main Introduction, pages ix ff.).

8.4 Conclusion

This chapter has pursued the goal of testing the *viability* of the methodology of *philosophical terminography* in its entirety against empirical cases at different levels of abstraction, which, as noted in the preceding chapter, were arbitrarily fixed at a depth of three and included culture (approximately academia in a given space of culture characterized by natural language), sub-culture (a specific discipline inside the human sciences), and sub-sub-culture (the phenomenon of "schools of thought" within a specific discipline). Considerations for the *heterarchical* effects of *contingency* and *stratification* on the modeling of the cases have been introduced. The practical linkage between the case studies and the *heuristics* used for their analysis has been established by means of the document mesostructure. Insofar as the models of the *thick concepts scientificity* and *disciplinarity* were seen to include (or rather, to enable the *simulation* of) *stereotypes* that involve *sentiment* or affect, a provision for *qualitative sentiment analysis* has been included as a final addition to the *praxeology*.

The idea of intellectual styles was introduced as a retrospective addition to the analysis of the formation and use of the term *terminology science* in Chapter 2. The findings of this section can largely be seen as the implications of *stereotyping*, as in our model *worldview* components *per se* (named, as established in Chapter (4), after the eponymous philosophical subdisciplines) cannot be immediately translated into to phenomenological models. functions.

Galtung's observations have been found subject to considerable *stereotype*, but also to demonstrate attention to subjects as contexts and operational parameters (*paradigm analysis, proposition production, theory formation, commentary*) which can be seen to contribute to the conceptions of *scientificity* and *disciplinarity* if applied to smaller and more well-defined modeling levels. Interesting in this regard are estimates of the propensity to confrontation per larger culture, and idea which orients to a case for evaluation on the sub-cultural level.

Perhaps for similar motivations, Galtung's idea seems to have seen a wider than expected reception specifically in the context of German-language Translation- and Special Language studies. Here, operationalizations in terms of register analysis and macroscopic texture (thematic organization) – especially with view to the conventions underlying human sciences discourse – are pronounced. In terms of terminology, a relatively isolated study found a greater propensity to polysemy of technical terms on the side of this imputed "intellectual style", which was however also ascribed to more specific contexts. Especially the varying expectations with regard to the function of texts between the larger German- and English-speaking cultures can be of interest in multilingual *interactive concept analysis* and *philosophical terminography*. In terms of the reception, some sensitivity to *stereotype* was found, which however turned out to be best interpreted in terms of sub-culture.

Here, a comparison was made between the speculations of Galtung and the findings of a

qualitative survey on the agendas of *terminology research* in different geographic areas. The agreement of the cross-connected categories was striking, if corrected for the level of abstraction used. A possible form of *bias* that emerged in the survey became apparent – the phenomenon of sub-sub-culture ("school") seemed underreported, which corroborated the difficulty of using a very coarse category like geographic area for subject delimitation in a human sciences context, and therefore justified the application of heuristic means like *agenda, contingency, stratification,* and *declarative* and *procedural* elements of the *meta-schemes* (and *schemes*) developed.

Most of our considerations in terms of *scientificity* and *disciplinarity* were geared to the median modeling level of sub-culture, where terminological interchange processes were held to be most pronounced.

Our schema for *philosophical terminography* was found to reach operationality on the level of sub-sub-culture, which was found to overlap sub-culture in terms of the interpretation of C.P. Snow's two cultures conjecture, which was apparently formulated by means resembling *thick description.* Here, preference was also given to specific receptions. The conjecture was adjusted for the observations based on our earlier reflections on topicality. In a human sciences context, groups of scholars may subscribe to mentalities that may roughly be thought of in terms of the conjecture from a *paradigmatic* point of view; here, *paradigmatic* considerations could be tied to *nomothetic* and *idiographic agendas* (*procedural disciplinarity*) as well as to the construct of *scientificity*, as was stipulated in the model. Some correlation of these with regard to concrete fields was also extracted, whereby philosophy was found to be among the fields with an indeterminate preference. On the *syntagmatic* aspect of sub-culture, this seems to be tied to a general preference for *text types* that accommodate the formulative needs associated with *agenda.*

Being somewhat underdetermined, the idea needed to be set in relation to *contingent register conventions*, which together with the preferences for forms of *texture* and definition strategy could be seen to combine into the gestalt of a codification mentality. Here, two *stereotypical* or *prototypical* ones could be induced, correlated to the *ideal types* of the two cultures. The induction of the mentalities presented a reversal of the top-down schematic of *philosophical terminography* for the *simulation* of *text-* and *discourse-world models* in conjunction with *cognitive interests* in others. In combination with the idea of *embodied knowing* (or *middle-out perspective*), it was assumed that these models need to be superimposed to explain them functionally in bi-directional terms.

In terms of its expository function, the "scientific" *codification mentality* can be understood to work in terms of specification along *nomothetic* lines and to have a preference for the creation of a technical metalanguage, which seems most cogent with view to the philosophical/ terminological definition strategy of "charging" artificially coined terms (*neologisms*) with *intersubjective* or "conventional meaning" by way of definition. These definition systems can be arranged taxonomically and the taxonomies may be presented visually. The ontological argument that accompanies these constructions can obfuscate the perception that these scientific languages are based on *maker's knowledge*. However, since it also follows a recognizable routine format, the terms can readily be recognized, e.g. by terminologists, though *text types* produced by this mentality may appear *stratified.* In terms of *contingent conventions*, there appears to be a *taboo* on narrative devices and therefore text types. Both the form and the mentality are to be seen as in principle independent of *topic* and therefore may recur in the human sciences wherever they are

conventionally accepted. Where there is no tradition for the "scientific" *codification mentality*, its introduction may however be opposed due to inverse conventions. This contingency can be reconstructed from the reception of the two cultures conjecture.

As was found in earlier attempts to find a definition for the umbrella category of the human sciences, its specific *codification mentality*, if any, seemed to be more difficult to induce. Generally characterized by a preference for abstraction *away* from the specific, *a priori* influencing factors along the lines of foundational beliefs seemed to have an influence. Here, questions of *acceptability* and *appropriateness* seemed to come to the fore with regard to the *paradigmatic conventions* of supposedly closed sub-sub-cultures, which have been observed to restrict terminological choice in conjunction with discourse conventions. Induction from the phenomenon of *retronymy* and *explication* was required. *Conventions* were assumed to be perpetuated in the training of practitioners. The signaling function of terms in terms of belonging and authority was assumed to take preference over the expressive function, which was seen as problematic from both discourse producer's and descriptive terminographer's point of view. This also seemed to extend to attitudes towards visualization. The *taboo on neology* was construed as the inverse of the *narration taboo*. Critique of the discursive conventions seemed *contingent* of the institutional environments.

Against this experimental construction of a *discourse-world model* on the basis of the elements of the *meta-schemes* of *scientificity* and *disciplinarity* and their modification, a case study was conducted using the methods of *philosophical terminography* that were discussed in the respective chapters of the thesis. Here, the full text of a complete debate (in German) was used, summarized and translated/ interpreted.

The setting was found to be a "traditional" humanities context (German literature studies), necessitating all due consideration to *half-life*. The "opponents" in question were a representative of the "historical critical hermeneutics" and the "radical constructivist"/ "empirical literary studies" sub-sub-culture of the disciplinary sub-culture, although the predictive functions of the larger conjectures were also being considered. Here, the first overlap of terms of the meta-schemes and the modeling levels was found. With regard to the topical content of one text, a taxonomy was extracted to demonstrate the problem of subject delimitation.

Gehrke's style of argumentation and his incriminations against the "invasion" of his topic were partly explained in terms of a supposed *stereotype* on systems theory "inherited" from or *contingent* on earlier debates. The *tenor* of the debate could either be interpreted in terms of the destructive argumentative style stereotypically ascribed to the "Teutonic" discourse conventions or in terms of the "threat to dignity" conjecture immanent in the two cultures idea. Defamations of the constructivists (all of them?) as "fascist" were inexplicable in the context of either. With regard to the clash of *codification mentalities*, it could be imputed that Gehrke may have simply "hooted down" the import of a systematic terminology (within the preference of the "scientific" *codification mentality*) with "*ad hominem aspersions*" (Riggs). No detailed analysis seems to have been conducted on texts as the Schmidt's riposte suggests. This is suggestive of conventions, terms and textures having been interpreted stereotypically. Some of the writer's foundational(ist) beliefs are drawn to the surface in the conflict, exemplified by the use of citation to mobilize the *prototype* of the philosophical school with which Gehrke identifies. In this context, *agendas* also became apparent. Their discussion is couched in a critique of the metaphoric underlying the "offending" terms. Institutional context is implicated. The use of *rhetoremes* in an attempt to

parody the "opponent's" terminology can be witnessed, whereby affect words are interspersed with technical terms in the fragment. This use of terminology can be characterized as *contratextual*, a feature implicating the entire *texture* rather than isolated units, and therefore requiring a non-reductive approach to documentation, as it is intended for *philosophical terminography*.

By contrast, the reply of the "attacked" Schmidt is brief and – being dedicated mostly to the "correction" of Gehrke's interpretations – comparatively less stratified. Defense is effected by presenting the full text of the distorted passages. Investigating the reception of the critique of term formation, it appears that no fundamental critique of the practice of defining is recognized. Also, it can be noted that the discourse of the debate becomes stratified by mutual citation, as fragments of first text are inserted into the second text. The conflict seems centered on the connotation of a particular term, the formation *structural coupling*.

Here, the *praxeology* of *philosophical terminography* is activated in order to design a possible explicit *text-world model* for hypothesizing the disputant's associations. This also involves the use of *language engineering* techniques. Synonymy, homonymy and connotation in an interlingual context are also experimentally addressed. The "scientific" *codification mentality* is contrasted via a discussion and analysis of the term *structural coupling* in terms of general language resources, by which the differences in interpretation stemming from differing (sub-)sub-cultural conventions are highlighted. The conceptual inventory of *philosophical terminography* is applied (by use of the mesostructure) along the lines of the *simulation theory of mind*. On the grounds of the fluid boundaries of sub-culture and sub-sub-culture experienced in the case study, the level of sub-sub-culture proper is then evaluated with the aim of constructing *heuristics* to conduct analyses on smaller pieces of text, or *text fragments* proper.

For this purpose, the possible *contingencies* of the emergence of sub-sub-cultures are inducted on the example of *scholasticism* as a historical and supposedly contemporary phenomenon. This course is taken to avoid the absorption of *stereotypes*.

Historical scholasticism is differentiated from the contemporary, rhetoremic use of the term. By retracing the *aura* of the former, a traditional grounding for contemporary *codification mentalities* can be found; this also draws attention to the interaction of *diachronic* and *synchronic* perspectives of study that is inherent in *interactive concept analysis*. Verbs of the *lexical field* of saying and *perfunctory citations* foregrounding some sub-sub-culture's "network structure" are related to the *function* of terminology in (supposedly) non-empirical contexts and identified as indications of sub-sub-culture.

On the synchronic end of the investigation, the *rhetoremic* use of *scholasticism* identifies the term as a possible vehicle for the critique of the gestalt of sub-sub-culture.

Here, the pattern detected in the larger (sub-culture-level) experiment of finding *rhetoremes* and affect words clustered in fragments seems to repeat for the selection, which can be related back to the complexes of *scientificity* and *disciplinarity* in *procedural* and *declarative* terms and traced in the mesostructure of the document.

An instance of positive *sentiment* can also be detected, which is found to display the lexical pattern associated with historical scholasticism and therefore appears as a reference to the history of philosophy. Here, considerations with regard to styles of *declarative scientificity* (*foundationalism/ coherentism*) appear to be activated for the interpretation of the *contingent* phenomenon. This however also reveals the *self-centeredness* of philosophical schools (*philosophy of information, pragmatism*). The abstracted heuristic schema is then tested in the context of terminology,

philosophy of information and radical constructivism with regard to evaluating the dichotomy of "modernism" vs. "postmodernism" as form of sub-sub-cultural identification.

Concerning *codification mentality* and *agenda*, postmodernism can be seen as a largely indeterminate gestalt-like sub-sub-culture which however is seen to share a "non-linear" outlook with the "complexity"-oriented sub-sub-culture of "modernism"; Where the fragments contain evaluations of sub-sub-culture, lexical patterns (*prototypical named entities* and terms) appear, which reinforces the *heuristic* previously developed. "Multiform" negotiations of terms link this context of sub-sub-culture to "scholastic" patterns. Atypical, taboo-breaking textures can also be observed, which fall outside the scope of the *heuristic* (seen as incipient *text-world model*) and demonstrate its *bias*. That there seems to be no systematic connection between the patterning of fragments and "post-modernism" *per se* becomes apparent in an in-depth analysis of two fragments by Glasersfeld, with one explicitly disavowing postmodernism as stereotypically attributed to radical constructivism at a sub-sub-cultural level. This points the need for evaluating claims and the associated philosophical terminology in-depth by exercising the *discourse-world model scheme* and exploring the (in the anthropological sense) *lexical fields* by contrastive analysis of the textures of text fragments containing *retronyms* like *self* or *subject* in the process of evaluating the function of terms that form elements associated with larger philosophical systems of the *coherentist* conception. In the experiment, we have taken the *praxeology* below the modeling level of sub-sub-culture and applied it to the "idio-culture" of a specific individual's discourse production.
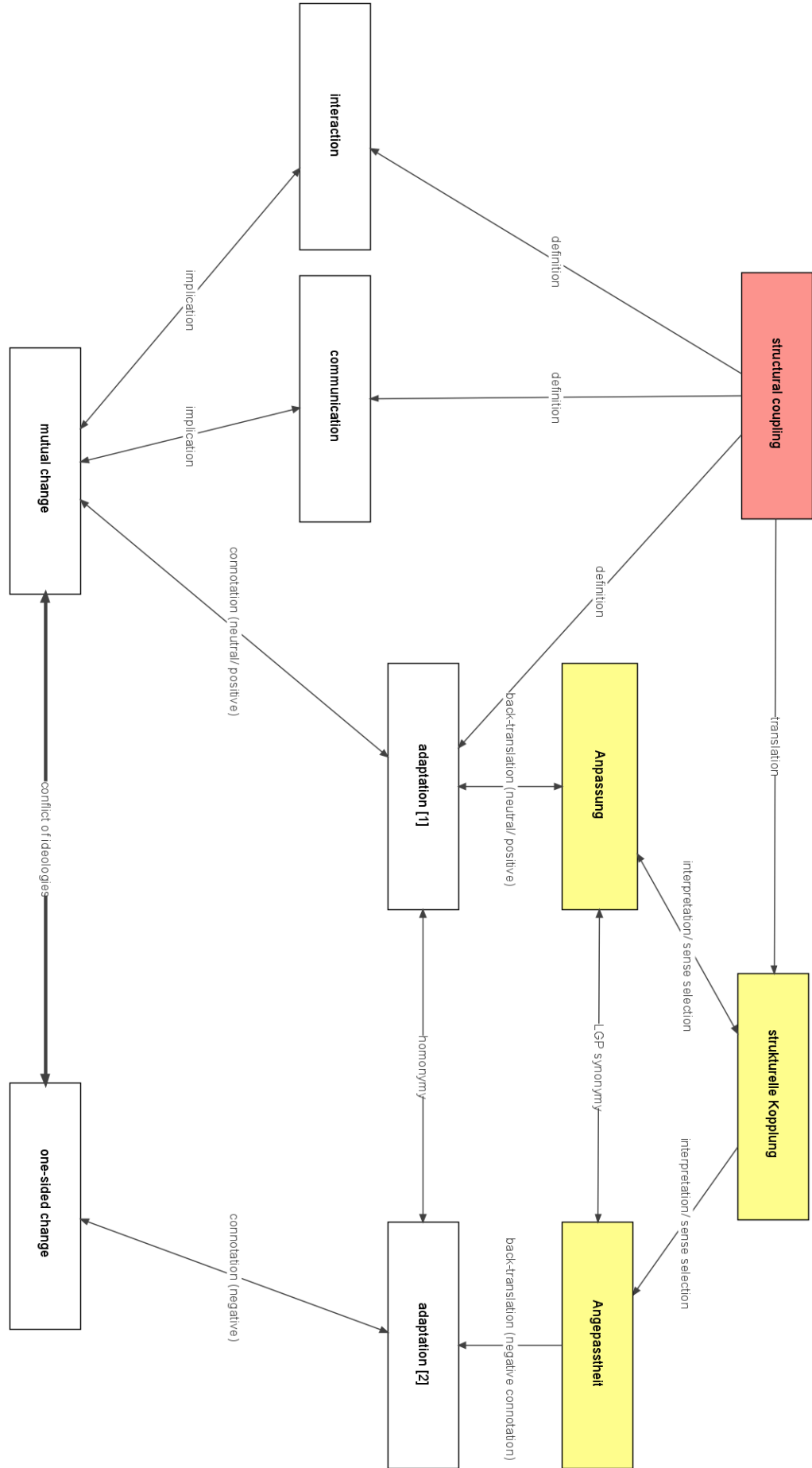
Figure 8.6: *Discourse-world model* and term interpretation.

Conclusion: describing and documenting fragments

As has been seen, the principles that have been gradually developed in the first three chapters of the thesis ((1), (2), (3)) have been first organized and condensed into the mold of a *praxeology* ((4), (5)) and then expanded to fill in practical needs which appear to be subject-specific ((6), (7)). The practical application of the sometimes very abstract principles collected, interpreted and operationally constructed in this thesis to the case examples in the last chapter (8) presents the perhaps unconventional conclusion to the regenerative theory construction enterprise of the thesis.

Given that the underlying motivation has already been identified and set out in the introduction (due to the orientation of hypothesizing *"a priori"* concepts necessary for the practice of *philosophical terminography*, perhaps a fitting textual device to present them), the practical part should nevertheless end on a few further observations on the *paradigmatic* and *syntagmatic* "ends" of the spectrum covered by the "practical philosophy of information" and perhaps a word of caution with regard to the application and modeling of the process concepts that are stipulated in radical constructivism under the category of *scheme*.

The small series of case studies demonstrates that the "orientation" effect of *schemes*[32] appears to be strongest when *scientificity* and *disciplinarity*, *discourse-world model* and *text-world model* appear to overlap; given that we assumed the declarative aspects of both *scientificity* and *disciplinarity* to display the *recognition* and *re-presentation* of both *prototypes* and *stereotypes* (with, as has been found in another term description experiment in Chapter (4), logical definition forms applicable to associated concepts), the following picture seems to emerge in this regard:
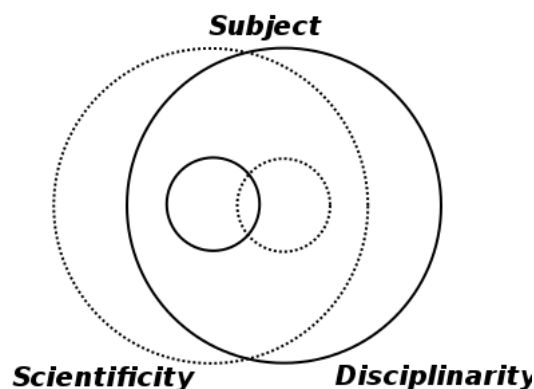

Figure 8.7: Superimposition of *ideal-typical* or *prototypical scientificity* and *stereotypical disciplinarity* for terminological tasks, e.g. subject delimitation, or term description using text fragments.

This is not meant to imply that this methodical sleigh of hand can provide "totally certain"

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[32]or rather, from the model point of view, those of schematics

subjective knowledge about the concept, even in a personal heuristic context, as might be the first impression to emerge from from the figure.

On the contrary, the broken lines describe an *equally large* area of personal ignorance which can be seen as the "shadow" of the superimposition.

Therein may be seen the (dialectic) relationship of *heuristic* and *bias*, and the dialectic of personal knowledge and ignorance brought to the fore in the introduction.

The constructs of *scientificity* and *disciplinarity* can, in the very restricted context of this exploration of philosophical terminography, indeed be treated as the "twin spectacles" (Barre/ Bertalanffy, (6), Introduction) that bring phenomena into focus for the "bracketing" that our adopted form of phenomenology requires. For this, it however needs to be accepted that the approach was developed from the instrumentalist perspective of a specific form of radical constructivism and operated mainly in terms of two requirements, i.e. that "interpreting a communication is the *process* of weaving a conceptual web such that it satisfies the constraints that are indicated by the received signs or signals" (Glasersfeld, (1.1.2)), which in the context of the praxeology developed may well be represented by a computational semantic network, and that the researcher's task consists of "the formation (invention) of conceptual structures and the attempt to demonstrate that experience can be fitted into these structures" (Glasersfeld, (3.5)).

While the practical task of weaving this network is embodied in the mesostructure of the document, its discursive content can be considered to constitute the formulative effort of both "inventing the structures" and the empirical "testing" or application of the overall construction in order to "fit experience" into it.

Pending further elaboration, the "hidden" network of the mesostructure contains a collection of approximately 180 defined terms or senses of terms that might be of interest for terminographers working in the field of the human sciences. This also goes for the almost 200 text fragments awaiting (more detailed or topical) textographic description.

Although the technical implementation of this could only be hinted at for want of scope, we nevertheless see the idea of "regenerative theory construction" as to some extent satisfactorily demonstrated.

Conclusion on the paradigmatic level

As has been shown, the model of *thick concept* includes *schemes* and *stereotypes* that aim at simplification and should therefore be regarded with some caution, even if no "ontological" claims for them are made. While we have largely asserted that the *stereotype* presents a model of "entity" concepts and the *scheme* appears to represent the flexible (as opposed to fixed) "process" model of concept which are bound together in the "thick concept" (constructed as heuristic fiction with procedural and declarative portions, yet modeled on the anthropological precedent or idea, (1.1.1.2)), there seems to a point after which some scholars in cognitive science see the *scheme* (or in the below variant, *schema*; see Chapter (4)) solidify into *stereotype* itself:

> A schema is a knowledge structure containing the generic representation of a concept. [...] Schemas can be held about any concept, are often arranged hierarchically, and affect perception, cognition, and memory. The concept of a schema can be traced to Immanuel Kant (1724–1804), who in 1781 discussed the concept in Critique of Pure Reason. [...] Jean Piaget used schemas to explain how children acquire new skills

> and learn to interact with the world. [...] *Schemas are thought to be functional.* They help to organize and understand the world and to *fill in informational gaps.* They also reduce ambiguity and serve as memory guides, directing our attention to relevant aspects in the environment. ***However, the overuse of schemas can result in stereotypes.***
> Wolf, 2008, 344, my emphasis

An indication of this has become visible in the abstraction of the schematic for identifying "post-modernism" in the final, fragment-based experiment, and, as should also have emerged, could only be corrected by turning attention to the individual characteristics of particular fragments. If we accept the *heuristic fiction of homonymy* then we might consider this a counter-stereotypic strategy which should hold in textual analysis as well as in social life:

> Perhaps because of the functional properties of stereotyping, stereotypes are difficult to change or eliminate. Cognitive strategies focus on providing ***counter-stereotypic*** or nonstereotypic ***information*** about group members to undermine or dilute stereotypic associations. This approach is more effective when stereotype-disconfirming information is dispersed among a broad range of group members rather than concentrated in one person or in a small number of group members (Weber and Crocker 1983). [...] Decategorization [accommodation, PBN] approaches attempt to ***degrade group boundaries by drawing attention to the individualized or personalized characteristics of people originally perceived in terms of their group membership.*** Recategorization [assimilation, PBN] strategies involve redefining group boundaries either (1) to change the representations from separate groups to one group which reflects a common identity; or (2) to maintain the original group categories but simultaneously to emphasize connection to a larger entity through common goals and mutual interdependence (Hewstone and Brown 1986).
> Weinberg, 2006, 805, my emphasis

With regard to this and to the multilingual aspects of *philosophical terminography*, especially with regard to conceptions like *intellectual styles*, the following should be remembered, even where the *heuristic* appears functional:

> Most models of human cognition abstract away from variation, whether cultural or individual. But in the case of language, the capacity to handle the cultural variation is a central property of cognitive ability.
> Levinson, 1999, p. 441

Documenting particular fragments and analyzing them for specific conceptual facets can help *de-stereotype* and therefore enhance *worldview construction* and discourse production capabilities in *philosophical terminography*; in this regard, we would like to point to the relative nature of *relational concepts*, in terms of which *scientificity* and *disciplinarity* might be interpreted in the above diagram. Differentiation and comparison along these lines are also a key property of "[e]quilibration [... which is] not a static affair which returns to a status quo, but rather a *relational concept* whose range is continuously extended by the formation of new structures in the overcoming of perturbations" (Glasersfeld, on dynamic equilibration, see definition of *equilibrium* on page 102).

The conceptual instruments that would seem to be best suited to a comparative approach would be so-called *relational concepts* themselves:

> [R]elational concepts cannot be absolute, because they can be known only when an operating subject assembles them in experiential time. [...] **When we relate, we are obviously dealing with more than one unitary thing.** To relate means that we have one focus of attention, move our focus of attention to something else, and then look at the way we moved from the one to the other. Only by operating in some such way, can we specify a relation.
>
> Glasersfeld, 1991b

Due to the problems in definitely delimiting philosophical subject fields, the most important relations between which the "focus of attention" would shift in philosophical terminography are those of interdisciplinarity, intertextuality and multidimensionality, (each accounting for the etic/ emic distinction in viewpoint) which might be related to the well-known terminological dimensions of world, mind, and language, a complex which has been discussed elsewhere with regard to the same complex of issues and whose heritage is pointed out elsewhere by Neubauer (2012b).

As should also have emerged, the most promising level of observation might be the particular individual, as has been recommended for sociological terminography (Artus, 1982) and seems to be a common practice in philosophical lexicography. That an "exact copy" of this individual's "concept" does not seem possible should not be seen as a problem; rather, the creative potential of *philosophical terminography* for discourse production should be explored:

> As the author of a Spanish Dictionary of General Systems and Cybernetics, and currently of an English Encyclopedia surveying the same area, I observed the following aspects: - A thorough (and strenuous!) search for significant concepts in the literature leads to the **spontaneous formation of clusters of entries around the principal concepts.** Here is an example: Context: Context of context: context dependence; evolving context; context-free elements; internal context; context marker; meaning through context; relevant context; repeatable context. Thus, **every concept acquires a holographic character, while remaining more or less constrained in a zone of meaning.** This is coincident with the network model. - The shades of meanings thus brought into focus give its multidimensional significance to the concept. It also implies mental bridges toward various associated concepts. For example, "Context of context" implies the metasystem concept, the hierarchy one, GÖDEL's incompleteness, etc. It finally becomes possible to ramble more or less freely within the maze of concepts, which stimulates the capacity for discovery of meaningful conceptual connections. We may, for example, pass from "context" to "meaning", from "meaning" to "message", from "message" to "code", from "code" back to "meaning", or to "signal", etc. - Such free meandering stimulates **creativity** and, in systemics and cybernetics, **helps to discover new viewpoints**.
>
> François, 1997

In terms of the relational principle, it should be possible to facilitate both *worldview construction* and discourse production by enriching the person's encyclopedic knowledge (Beaugrande and

Dressler, 1981, ch. 9; Beaugrande, 2002; Temmerman, 2000, pp. 36, 43) through the active construction of terminographic records and texts, which in turn may keep the specialized *schemes* flexible and counteract *stereotyping* tendencies. This can, under an interactive view of *worldview construction* and discourse production, perhaps be considered the construction of a perspective that implicates both subject and object. The structure of records and texts brings us to the *syntagmatic* and technical consequences.

Conclusion on the syntagmatic level

Here, some consideration needs to be given the description of the *text fragment* as the unit of *philosophical terminography*, which thus might evolve into a philosophical textography under consideration for the implications of *texture* that have emerged in its practical application (8).

The cognitive function of the *reflective text fragment* in subject-driven descriptive terminology description has, as noted, been elaborated by Temmerman (2000, 42; 93, my emphasis):

> In order to assess the understanding of particular terms by specialists we particularly consider their reflective text fragments in publications in which they **attempt to describe or define what their understanding of the term involves**. [... Such fragments can express] the **explicit or implicit prototypical core definition** [of a category]

In conjunction with the idea that has emerged in the empirical application of our theoretical constructs, e.g. in the context of the "scholastic", rhetorical or argumentative use of such fragments, and with view to the application of *philosophical terminography* to discourse production, we might consider such *reflective text fragments* first-order fragments, insofar as they are taken over verbatim by discourse producers, and modified with a second-order or *annotation fragment*, as is described in a discourse production context by Lortal, Lewkowicz, and Todiarascu-Courtier (2005, my emphasis):

> The annotation is a "documentarized" fragment [...] which adds supplementary information to a document, contributing to collective sensemaking. [...] We are particularly interested in the cognitive enrichment of a document, defining annotation as a discourse fragment in connection with a text, an argument medium. [...] Annotation is a traditional element of **hermeneutics** (De Libera, 2000) and of **rhetorical discourse**. A discourse in rhetoric is a chain of **arguments**. Indeed, we are considering the annotation definition in a cognitive view, as a textual fragment anchored to the document, which arouses an assessing idea.

To some extent, the potential or *paradigmatic* component of the entire fragment, which could be considered the *philosophical or hermeneutic text fragment,* have already been considered in the thesis; while its main body may either consist of an *explication* (5.3), or, perhaps in the case of import from a more "naturalist" discourse, a *defining context* in the classical sense (2.3.4.1), we have found further elements featuring in the vicinity of the defining element:

- *rhetoremes* (8.2.2.2), which modify the connotation of the terms (5.3) in a fragment; these can be associated with, e.g. *semantic stereotypes* (2.5.5.3) or *associative stereotypes* (2.5.5.2),

- general language items, especially verbs of sensory perception or saying which are indicative of *agendas* and typically instantiated from *lexical fields* (5.4.2.5), which could be inferred from thesauri or semantic networks (5),

- *retronyms* (2), which would be typically the subject of terminological negotiations (8.3.3) as authors engage in *epistemic writing* (2.5.5.1) in order to devise *neosemanticisms* for their self-determined (7) *cognitive interests* (7.1)

- *named entities* (6.2.2.2.3), which implicate the personal or textual *prototypes* on which some discourse is modeled ((1.3),(2),(3)), or generally that which has been grouped in the category of *contingencies* and taken to signify the *stratification* of the textual artifact in the present work (6),

- *bibliographic data*, which allows to trace the propagation of terms through texts (1.3.2).

In summation, the *text fragment* can be seen to fulfill the function of prototypically implicating the entire *texture* (3) of the larger unity of its source text, which indicates *genre* (2.5.5.1), *register* (7.2), *tenor* (6.2.1.3) and *text type* (8.2.1.1). These factors can help pinpoint and annotate, e.g. *discourse-* (2.5.5.1) and *subject-related stereotypes* (2.5.5.2).

Records of these can, in turn, be used to induce e.g. *agendas* (7.1.1) or *codification mentalities* (8.2.2.3). In an abstract depiction, the above could be represented as pattern akin to this:
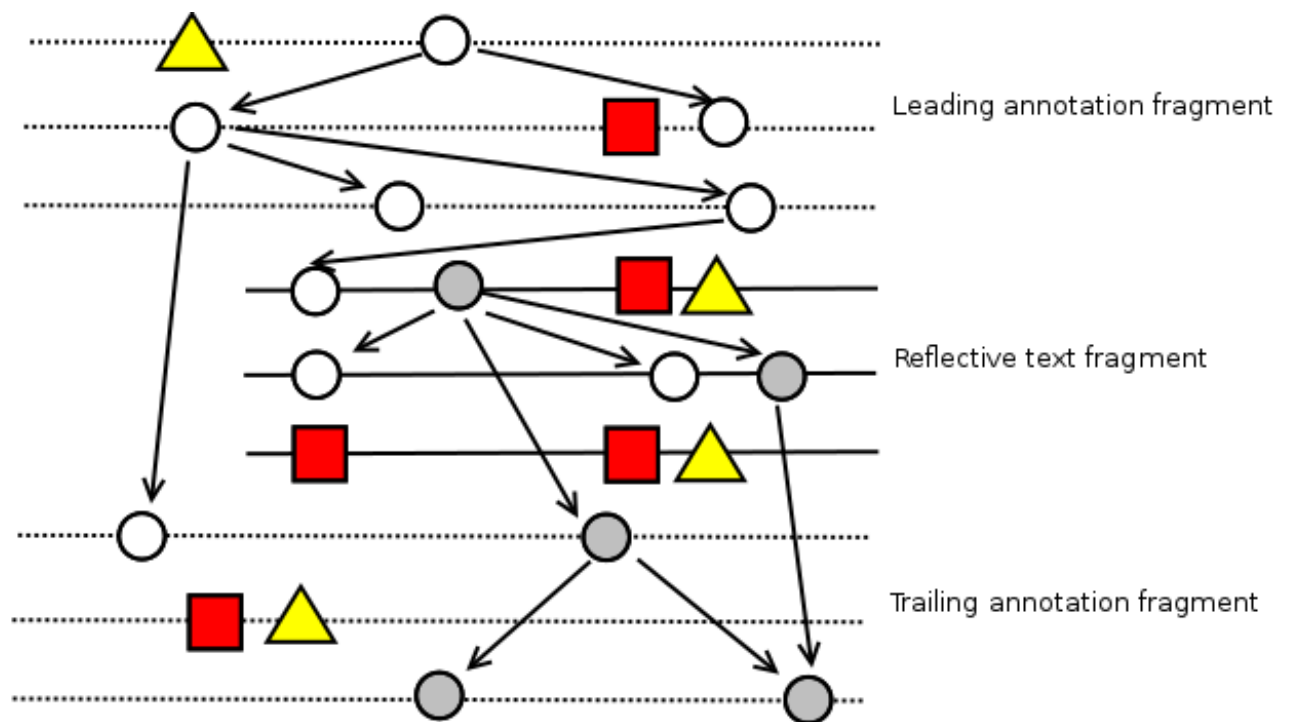
Figure 8.8: Schematic view of an idealized philosophical fragment.

Here, the yellow triangle might stand for *bibliographic data*, the red square for a *named entity*, the white circle for general language entity and the gray circle for a given *retronym*. The depth of embedding symbolizes the *reflective text-* and *annotation fragment*, respectively. The entire form may be taken to represent the *argument* (as in Engelbart's generic understanding of *argument* as sequential arrangement of signs, see definition of argument on page 99) of what can be considered

the philosophical or hermeneutic fragment, which itself can be seen as the *aura* of an information construction process (or the observable trace of a process long since transpired, see note on page 158) and a component part of larger discursive artifact in which the *arguments* are chained coherently (3.3.3) to best fit (but not match) the discourse producers *text-world* (4.2.2.1) and *discourse-world model* (4.2.2.2), which can be imputed to be controlled by their meta-schemes of *scientificity* and *disciplinarity.*

As a consequence, the hermeneutic or philosophical fragment may be seen as *syntagmatic* trace that implicates the discourse producer's worldview in a not quite transparent manner, which may be put down to the fact that the other's worldview, modeled through the interpreter's personal *theory of mind* (5.4.1.1) has already gone through several adaptations to subjective models of the so-called *discourse multiverse* (101).

In recursion to the idea of an "instrumental phenomenology" (7), we could say that the *paradigmatic* components "behind" this argumentative chain remain "black boxes", but that the re-insertion of the philosophical fragment in a third-order *texture* (or smaller fragment thereof) can be seen as signifying a "white box" from the discourse producer's perspective ((4), (5)).

From the phenomenological perspective, the "black boxes" could be thought of as irreducible *unities* or *holons*, whereas the symbolic outgrowth of the "white boxes" could be distinguished as *units*.

The term *holon* describes a unity, likely in an irreducible sense in the systems sciences (François, 1999, p. 206); this appears a practical idea to describe experiential aspects of *concept analysis* (1.4.4) and *phenomenology* (7.1.2.2) and has been adapted in a special language translation context as a "macro-structural holistic level on which (implicit) world or LSP knowledge in texts is made transparent as underlying holistic system" (Gerzymisch-Arbogast, 2008, pp. 10/11).

However, there is little indication of a specific *unit* on which this could be demonstrated below the level of texts, and as has been found in (8.2), the holistic level involves looking at the *stratification* of fragments in terms of entire textures which is not always possible.

In terms of distinctions made in the "flow of experience", the *holon*, or "concept of a unity that comprises everything is not feasible according to the rules of rational thought" (Glasersfeld, 1998), which requires the association of smaller pieces of text (or aforementioned fragments) with denotable *units*.

In these concluding observations, there is no place to review the entire issue of units in linguistics or philosophy of science (compare Beaugrande, 1997b, ch. 2, § 30 and Budin, 1996b, pp. 22/23), except that what could be considered the "fragmenteme" seems to occupy some place between the units of knowledge ("epistemata") and the communicative units ("discursiva") on the conventional scale (Budin, ibid.), which is due to the inheritance of the holistic aspect of the interaction pointed out in the above.

Their relation to *term* as understood as the stop or *end* of a "thought" (5.3) could in this sense be construed as the possibility that a term – as noted, likely a *retronym* due to concerns for instrumental utility – could be used as a lemma to index a fragment, and therefore become the *beginning* or heading of a fragment. This likely the only comprehensible way of communicating it.

By archiving fragments in this way, *cohesive* and *coherence-bearing* properties of *texture* could be preserved for *philosophical terminography* (5.1).

The theorization of such strictly linguistic structures might proceed along the lines of the study

of other "suprasegmental" (compare the ideas of *heterarchy, emergence*: 6.3, § 2a and § 3a) units, such as *"phrasemes"* (Budin, 1996b, p. 18) or more pragmatically oriented ones, like "boilerplate" or standard (sub-)texts (Wright, 1997a, p. 16) in the context of excerption in an information management context (Krämer and Walter, 1996).

The decisive criterion here is that the unit be large and sufficiently *cohesive* to allow the construction of *maker's knowledge* (4.1.1) appropriate to the situational uncertainty, which may require that a term in the more classical sense is either inserted into the fragment for the purpose of interpretation or that, on the inverse, the fragment itself can be used to "expand" the conventional meaning of a term found in the context of a different fragment. Both methods of interpretation have been used repeatedly in the present work.

Outlook

On the foot of these *syntagmatic* considerations follow concerns for the practice of what we have called *meta-codification* (4.2.2), to the extent that this can be seen in isolation from *codification* (4.2.2) at large.

They can be placed in the field of tension between *codification mentality* (8.2.2.3), which would appear to condition of the form of materials to be processed and from which the need arises to distinguish "units" for practical use in the first place, and *language engineering* (5.1), which conditions the range of means considered to meet the ends of practical *codification*.

Given the experiential situation outlined under our considerations for *procedural* and *declarative disciplinarity*, as well as the findings of the application-oriented final chapter, it would seem cogent to characterize the codification practice in question more closely.

Strictly speaking, a *cognitive interest* that looks at suprasegmental units or "fragmentemes" occupies, like its object, some median position between terminography and discourse analysis proper, and might perhaps coincide with the practice more or less known as *textography*, which has found reception in translation- and terminology studies through the work S. Göpferich (Sandrini, 1998; Budin, 1996b, p. 165). In this formulation, it would however seem to be mostly interested in documenting *text types*:

> A current example of the methodological intertwining of [epistemic interests] can be seen in Göpferich (1995a), who transcends terminography in the direction of "textography", whereby text-type specific pieces of text (Ger. "Versatzstücke") are managed with the aid of computers. Full-text databases and terminology databases are linked in order to generate textographic glossaries.
>
> Budin, ibid., my translation

In considering such applications, the aspect of *codification mentality* comes to the fore, which entails the now known consequences for the delimitation of human sciences fields and their associated texts and terms, where, especially in a post-modern context, considerable variance of *text types* and *registers* can be expected.

The *textographic* approach has, as its reception suggests, roots in the study of repetitive, formulaic text types (patents, Budin, ibid.) and has been interpreted in terms of regarding text pieces as collections of logical sentences (or *protocol sentences*, (5.1), Sandrini, ibid.). Like other meta-codification phenomena, (5.1), this may or may not be conditioned by the capabilities of the record format used.

Given the needed flexibility of (meta-)codification techniques, one would need (as we did) to expand the *language engineering* concept towards *language technology* in the wider sense (5.4.2.4) and include simple, modern ways of managing linguistic content, such Wikis in desktop (zim-wiki.org, 2011) and server environments:

> What is content management? [...] At the simplest, the writing of a book, the administration of a library or an archive are content management in the widest sense. Archives require administration [...] Content management systems exist to reduce this administrative overhead [...] One could say that the Wiki is a special type of content management system [...] Its main function is [that of a knowledge database ...] with flat hierarchies: although particular pages can have a hierarchy of headings, all information is in principle on the same hierarchical level [...] whereby index terms [lemmata, PBN] are used to locate information.
>
> Lange, 2007, 30-34, my translation

Flat hierarchies (if the user chooses them) and the capability for "tagging" (a form of informal categorization that also works in other contexts, Neubauer, 2012a) can, in principle, enable the dis-articulation of non-Aristotelian *concept theories* (compare the following: "Reflection is needed on the possibilities for providing [...] terminology management systems with information about polysemy and diachronic development", (Temmerman, 2000, p. 236)) as terms in fragments would appear in a "tag-cloud" separate from the index of lemmata:
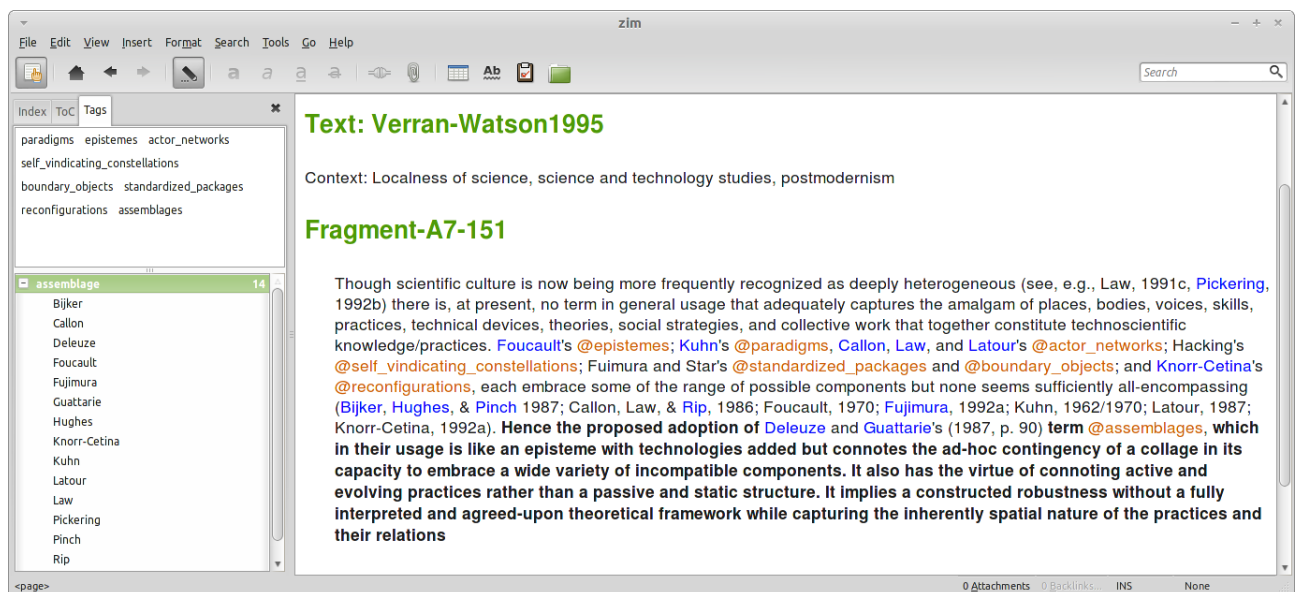
Figure 8.9: ZIM Desktop Wiki. In the upper left-hand corner: a tag-cloud.

Beneath the hierarchy of lemmata, socio-historical contingencies or social relations may be recorded, whereby an arbitrary depth can be used for storing other pertinent information of the user's choice. Hyperlinks, here shown in blue, can be used to link further records on the same level or a deeper or shallower level of hierarchy.

This is how fragment collections and texts of *philosophical terminography* could be codified and integrated into the larger knowledge management chain, which must include a separate database of texts and bibliographic information (for this aspect and the integration of terminology and documentation, see Budin and Galinski, 1998), whereby for discourse production proper, i.e.

the assembly of larger texts, a document processing system that has knowledge management capabilities itself (e.g. (LyX project, 2012)) may be used as an additional intermediary level below the extraction of terms from those fragments that have made it from the text corpus to the content management to the document production stage:
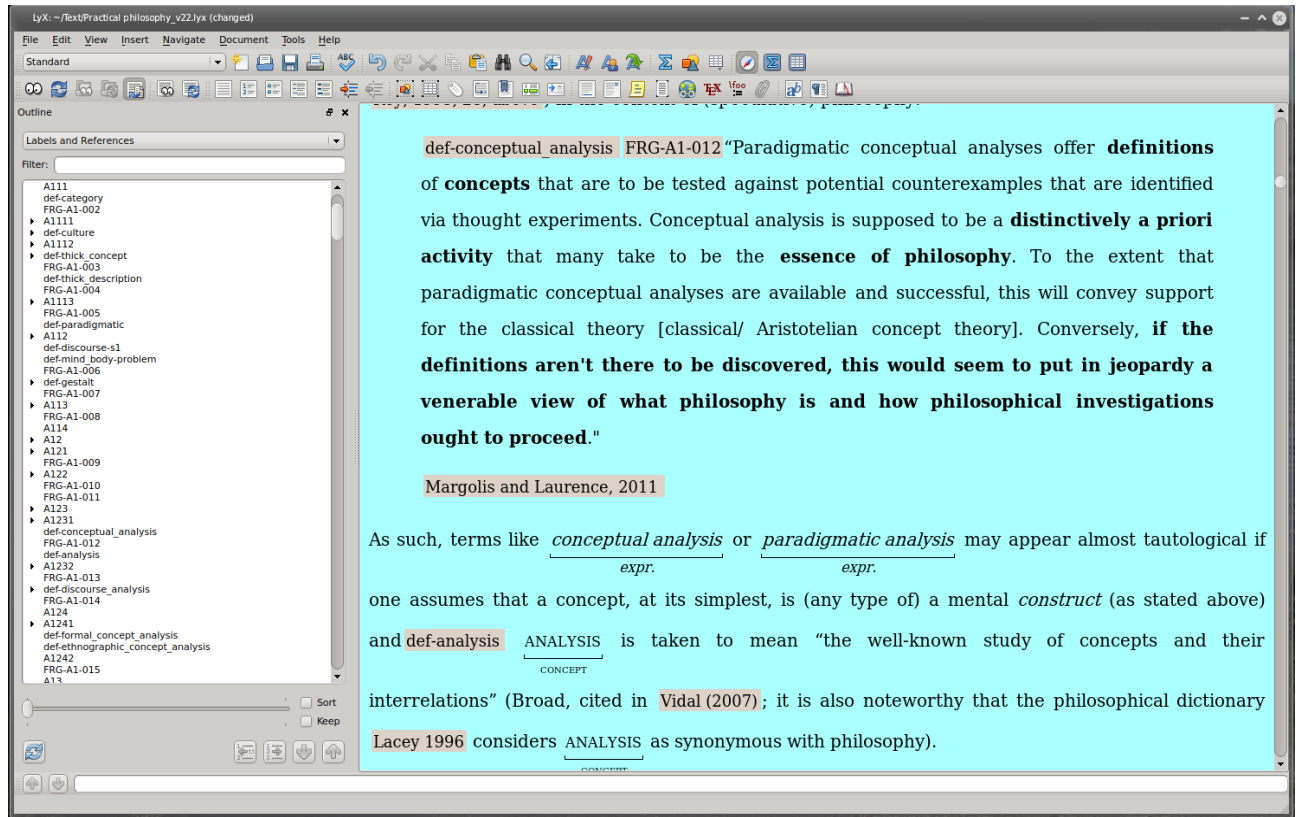
Figure 8.10: LyX document processor, showing an excerpt from the present work. The elements shown include numbered fragments, anchors to mark definitions, semantic markup packages for logic and linguistics and tags for bibliographic references.

In this particular case, the document macro- and microstructure can be used to store and organize (i.e. create) nodes of a mesostructure of hierarchy-transcending links, whereby it must be kept in mind that what is presented to the text producer/ software user (i.e. shown here) is merely the source "code" (LaTeX format, see application reference) that can (and in fact, has to be) compiled into the text recipient's/ end-user's format (PDF, HTML, Plain text). In this process, the capabilities of the source can be (partially) preserved or lost.

In contrast to content management, which can be seen as a preliminary stage of discourse production, the purpose here is discourse production proper, and not codification in the stricter sense that is its conventional meaning in the context of terminography or lexicography (4.2.2; application shown: ForeignDesk project, 2012).

For this, the document generated (which contains the symbolic/ *syntagmatic* signage associated with all the author's interpretation/ information construction work necessary under the constructivist perspective, (4.1.1)) can be extracted and documented further:
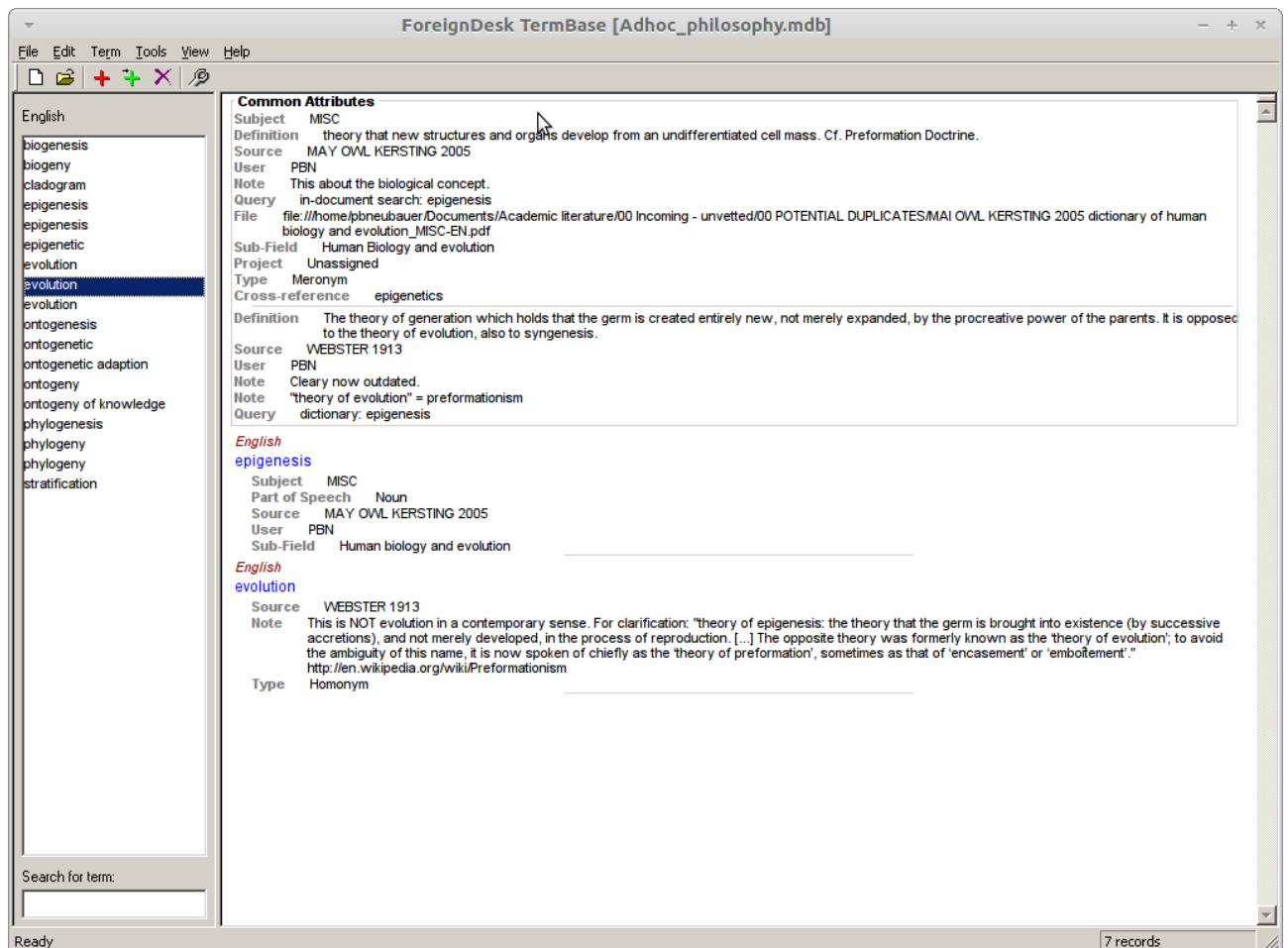
Figure 8.11: ForeignDesk termbase, showing documentation for the diachronic investigation articulated in Chapter 6 (6.2.2.2.2).

This is however the method of *generic terminography* (5.1) which may, as noted, be more or less amenable to the *codification mentality* encountered (and which should be considered for adaption on the individual level, a more viable proposal than calling on discourse communities to change their codification mentality, compare (8.2)).

Here, concerns for *meta-codification* loom large, yet the process of data modeling that is in principle possible with conventional databases is in essence hierarchical and cannot be separated from Aristotelian logic, whose principles can be seen isomorphic to it (Neubauer, 2008). However, it needs to be admitted that the actual way of presentation may vary with structure of database application in conjunction with its user interface.

Conventional terminology collections are at least indirectly dependent on higher-order classification thesauri insofar as these are used to index and retrieve the document collections from which the terminological data are isolated (Budin and Galinski, 1998; this also includes the potential indexing of the collections themselves; compare tagging of textual content, above): in principle, yet another meta-level may emerge for this function, which is not dissimilar to ontology engineering, the formal encoding that is the staple of contemporary *knowledge engineering* (5.1):

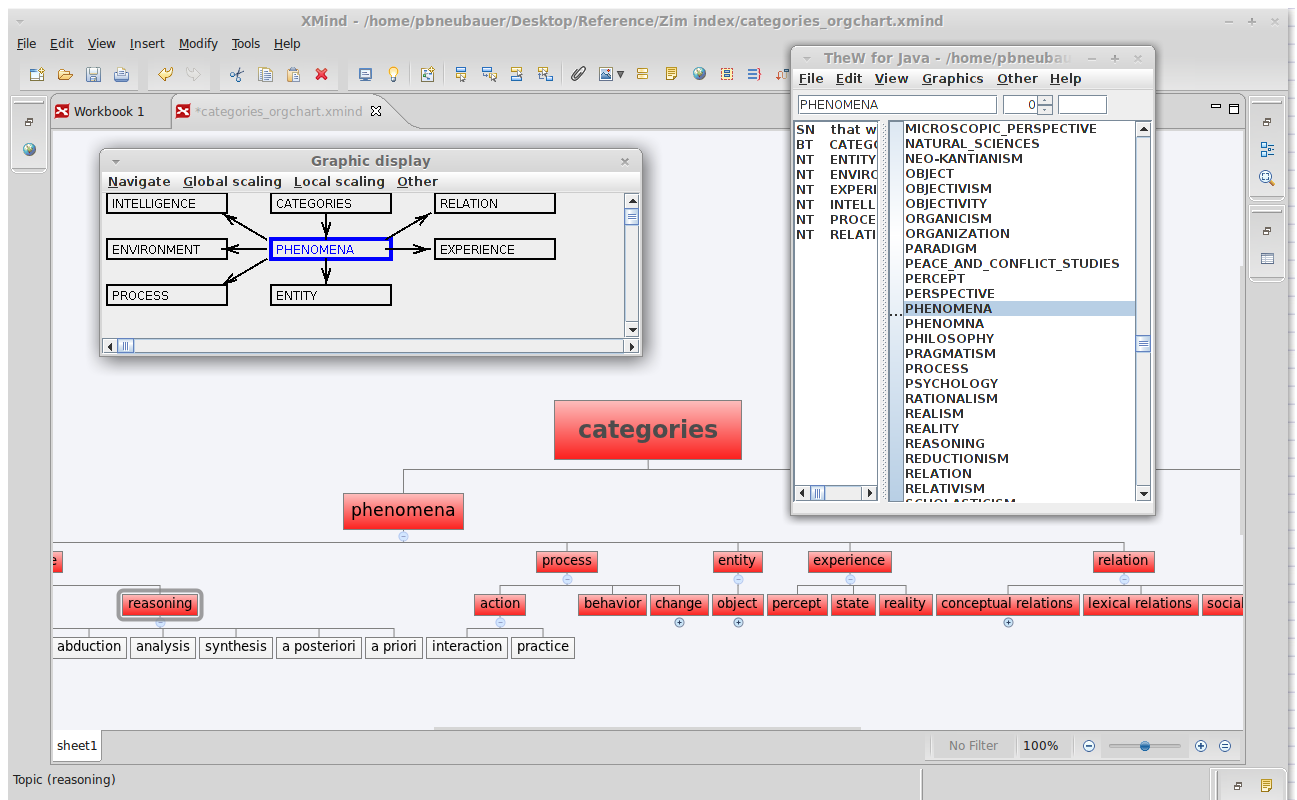Figure 8.12: Thesaurus management software Thew32 (Craven, 2012) with an experimental thesaurus indexing content resources. Background: Xmind editor, showing a draft of the index file (xmind.net, 2012).

In the final resort, all these progressive levels grow from a corpus of texts to be exploited, which, depending on its size and quality, could be interpreted as *corpus* (any; (6.3)) or alternatively as a *text bank* or *digital library*, whereby the term *text bank* (as in mentioned in relation with *textography*, above) which "display[s] data in multiple non fragmented authentic contexts -as many contexts as there are occurrences of a given lexical unit in the texts" (Cabre, 2006) for us has the connotation of a *corpus* combined with concordancing/ KWIC software (Anthony, 2010, as shown in/ used for (8.2.2.4)), while a *digital library* seems to include both the data, meta-data and information retrieval facilities:

> **Digital libraries** are a set of **electronic resources** and **associated technical capabilities** for **creating, searching, and using information**. In this sense they are an extension and enhancement of information storage and retrieval systems that manipulate digital data in any medium (text, images, sounds; static or dynamic images) and exist in distributed networks. The content of digital libraries **includes data, metadata** that describe various aspects of the data (e.g., representation, creator, owner, reproduction rights), and metadata that consist of links or relationships [p. 18] to other data or metadata, whether internal or external to the digital library.
> Borgman, 2007b, 17/18, my emphasis

On this interpretation, a system that includes any of the text-manipulation functions above ("create", "use") can be seen to be absorbed into the *digital library* conception, whereby in our interpretation, a *digital library* has at a minimum an ordered *corpus* of electronic text, a metadata (i.e. bibliographic data) management system and an information retrieval system besides a

document production facility.

An analogy may be seen in the difference between a terminological database (a collection of terminological data) and a terminology database management system (a collection of data and the means to create, manipulate and retrieve them). Websites like those presented in the concluding notes can be seen to as examples of *digital libraries* to a greater or lesser degree. In contrast to these administered and curated resources, however, the active nature of *philosophical terminography* presupposes that a *digital library* is constructed in a domain that the user has under their control (compare again Neubauer, 2012a). Normally, desktop environments present the logical starting point for this. This figure shows a setup that would meet the minimal requirements:
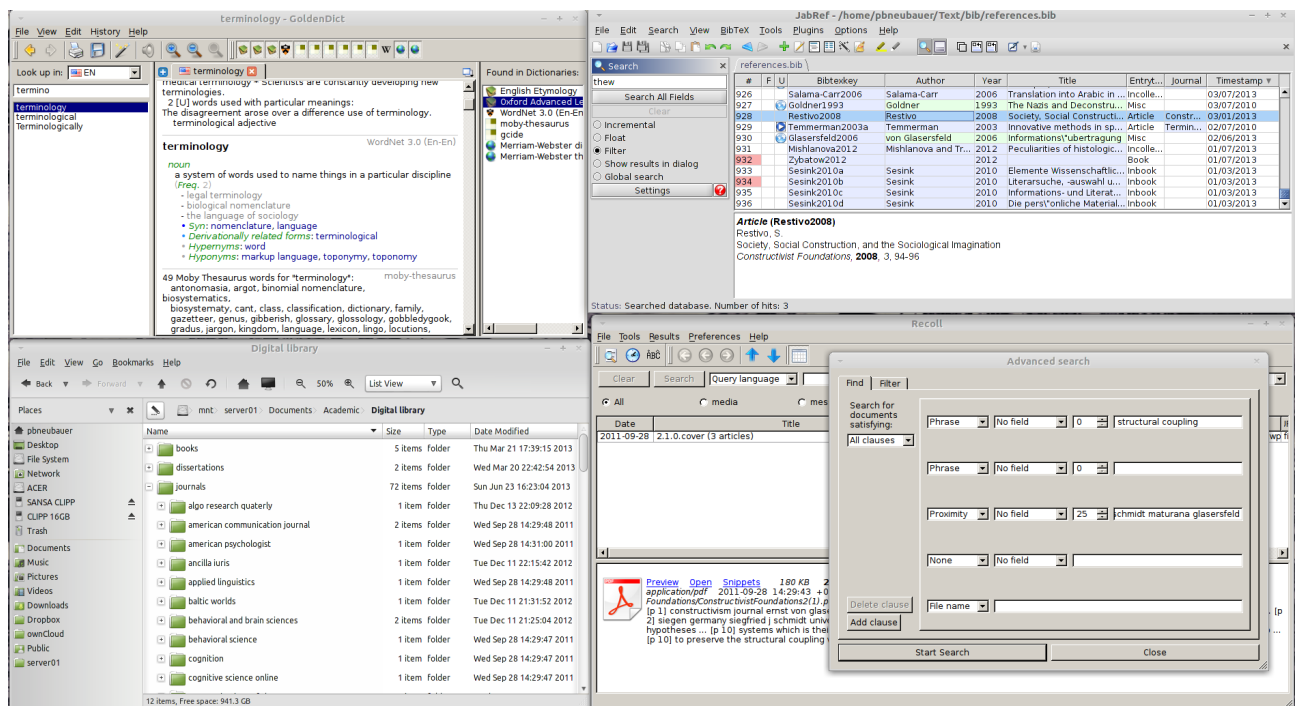
Figure 8.13: Digital library array. Applications shown (top left to bottom right): GoldenDict electronic dictionary (GoldenDict Project, 2013), JabRef bibliographic database manager (JabRef project, 2012), manually organized digital library, Recoll indexing application (Recoll project, 2011).

In addition to the components that are mentioned in the definition, we would add the requirement of an electronic dictionary capable of parallel query of several lexical databases (which would constitute a basic "dictionary network"; compare Trier Center for Digital Humanities, 2011) and a concordancer to the requirements, since information retrieval systems (though capable of complex concatenated Boolean queries so that they will process input according to patterns like in (8.3.3)) work on principles ("stemming", i.e. the reduction of all terms in the corpus to canonical form, Recoll project, 2011, Manual) that may *suppress* some phenomena of interest.

However, one may ask wherein the connection between the formulation of a phenomenology of *philosophical terminography*, *regenerative theory construction,* and the use of instruments like the above may lie.

The answer rests in the necessity for interaction between the human user and the electronic array, which is based on *heuristics* similar to those employed in text interpretation or the bracketing and formulation of repeatedly used cognitive procedures, or *schemes.*

The below schematic shows the relationship between entities in the hierarchy of the terminology management system/ *digital library.*

We have inscribed the content management/ *textographic* components specific to the processing of "fragmentemes" and the discourse production-related component in red.

A heterarchy of uniquely human processes of *reflective abstraction* (4) can be assumed which leads to the modification of the components as they are set in relation and synchronized, maintained etc.

This presents a process that may well cut across the linear hierarchy and can thus not necessarily be fully explained in terms of first-order cybernetic laws (4.3, §§ 1(d)i and 1(d)ii)) we have previously used for the purpose of conceptual ordering.

However, these can be used to simplify the modeling of either the artifact array or the modeling of processes, which themselves are not accessible other than by setting unobservables into some mutual relation ((4),(5)).

Figure 8.14: Practical application and future implication.

Here, we have been concerned only with the reflective, introspective and therefore heuristic aspects of a preliminary process modeling experiment that was artificially designed to make its own genesis reasonably visible and perhaps somewhat transparent. Our perspective has therefore been the microscopic (6.1.1) perspective.

As an alternative view emphasizing the macroscopic interest, interested readers may consult e.g. the work of G. Budin (1996, pp. 57/58), where the exponential growth of public libraries is discussed as a phenomenon of positive feedback in a larger social context.

On this note, a final remark on the future exploitation of the results of the present research

is on order. If one abstracts the project itself from the context of the human sciences, philosophy or radical constructivism and the strictly academic setting, which requires that individuals work in relative isolation, it would be conceivable that techniques for discourse production and textography could be rolled out to non-insular or networked systems, which would simply be a matter of rolling out the basic infrastructure on a local-area network and/ or the world-wide web (compare Lange, 2007; Lortal, Lewkowicz, and Todiarascu-Courtier, 2005).

Here, an additional requirement of *intersubjectivity* would apply, as the entire array would be linked to that which has been termed the *discourse multiverse* (see page 101). Here, social collaboration would become a possibility.

It remains to be seen whether or not this would require a change in the larger philosophical outlook. As in the present work, we believe that the answer would have to be sought by empirical, perhaps heuristic methods.

Notes and retrospective

These final notes are to elucidate points that should be known to the reader of the thesis but have, for a variety of reasons, not found an appropriate place elsewhere. In particular, they include notes on the development of the concepts and reasoning with reference to the work over time, data sources and some final thoughts on translation as a research method.

Challenges

It must be noted that the ambivalent nature of instrumental reason could not be given a fraction of the depth and attention the topic deserves. Those interested in exploring especially its unintended or undesired consequences might be referred to e.g. Weizenbaum (1976).

Change

While the present front- and back-matter of the thesis can be seen as a not quite comprehensive meta-analysis of the deeper themes and implications in the main body, there are certain formal (i.e. *syntagmatic*) features that can only be explained from the genesis of the present work as my thinking around it developed.

Having been written over the course of four years, it can be expected that some component that used to fit at some point or earlier design becomes orphaned as a new direction is adopted, which can also be seen as the implicit function of Weber's institutional pressures (i.e. the need to write to deadlines and present tentative ideas as solidly established in examinations, etc). This may seen as an effect of Britain's commercialized system of higher education as it presents itself in the first decade of the 21th century and points to the experience that reflective thought and efficiency are not by necessity complementary goals.

The originally proposed research project had in fact anticipated the form of the final product to a large extent (which is somewhat astonishing in and of itself); it was intended as a terminographic work that would incorporate constructivist concepts into sociocognitive terminology, although of course there was little indication then of how exactly this should be achieved.

Since, as noted, language engineering technology was an inextricable part of the project from the beginning, I changed it halfway into my PhD course to a project on human-computer interaction in the documentation of philosophical concepts. Out of formulative concerns, I distanced

myself from the idea as the thesis began to take its present shape: not only would the conceptual gap between the conceptual considerations and their practical implementation too great, but it would also have lead to the thesis containing too much material (excerpts from user handbooks, UNIX shell scripts, regular expressions, folder hierarchies, etc) that academic readers might find tedious and which, given the rapid release cycles of the open source community, would have been completely obsolete in some estimated two years.

This also affected the planned in-depth analysis of a German-language text and its English translation that was intended to highlight the import of terminology of one (naturalist) to another (coherentist) conception of radical constructivism and then its export, as an entirety, into the cultural space of a different natural language community, an analysis on the strength of which the present conclusion (arrived at via the shortcut of much abridged empirical part), i.e. the use of very loosely structured free-text format for philosophical records would have been justified.

This was also sacrificed to considerations of scope and time, but might see future publication in some different format.

Formal aspects and further notes

The purpose of structuring the document was to allow holistic observations that have a strong internal connectivity. To my mind, this is a question that is best operationalized by questioning the function of micro- macro- and mesostructure in terminology/ lexicography and by extension, philosophical terminographic discourse production. The relationship between these methods of codification is perhaps the central question of the present work. A provisional answer would be to turn attention to the function of mesostructure, an apparently neglected aspect of the codification complex. While the macrostructure of the thesis (the organization in chapters) is developed thematically and the microstructure (i.e. everything at the level of section and below) can be characterized as conceptual (i.e. explicitating associative, contingent and logical structures imposed on the material under analysis), the most important structuring device is the mesostructure of references which indicates the progression of ideas from beginning to end and also exemplifies principles such as heterarchy in a practical, operational kind of way. As either of these relate to phenomena of uncertainty or indeterminacy, this may be seen as linked to "big questions" or open questions of a genuine philosophical nature at appear on the horizon of the present work and the beginning of the introduction.

Citations and typography, data

The citation practices used are partly an outgrowth of the data used to test the approach to regenerative theory construction. The main criteria here were utility and transparency, i.e. the requirements that the corpora mainly employed to mine text fragments be

- Free and open (i.e. texts that are published under permissive licenses like the Creative Commons), which should increase the transparency of the work by helping others in its reverse-engineering and retrofitting the basic methods for other purposes by supplementing their own data instead of those I have used. In the case of the present project, the most important sources employed were:
    - The *principia cybernetica project* (Heylighen, Joslyn, and Turchin, 2001), a site that contains an experimental dictionary of the systems sciences and significant number of

off-prints authored by Charles Francois, Francis Heylighen and others;

- The University of Vienna's constructivism portal (Riegler, 2010), which also contains (to smaller extent) lexical resources;

- The Ernst von Glasersfeld Website maintained by Alexander Riegler (Riegler, 2003), which contains a substantial offprint archive and a bibliographic register of works;

- The website of Robert de Beaugrande (beaugrande.com), which contains a substantial number of digital reprints by this author

- Plentiful, i.e. providing a large corpus with a sufficient time span and thematic range; this is largely the case with regard to the above.

- Be "natural" insofar as the resources should not represent a biased selection, but a real cross-section of the work associated with either an individual or a voluntarily associated discourse community; this is obviously a function of open-access publishing.

In this regard, most (but not all) of the texts used are either preprints or postprints of peer-reviewed literature or "gray literature" selected by heuristic quality criteria. Page numbers are given where they are meaningful, which is not likely in the case of pre- or postprints. Care has however been taken to ensure that enough of the text (at a minimum two words, separated by spaces) is given to help the reader locate the passage by means of electronic search functions, unless the references relates to the overall interpretation of the argument of a text. URLs/ DOIs pointing to the resources are provided on the bibliography where possible.

Translations

Translations are to be seen as device of analysis as well as another heuristic fiction subordinate to the holistic fiction. Even though the impression emerges from the thesis as a whole that there seems to be no topical context that can transcend the boundaries of its time and place with its intersubjective organization entirely intact (providing one assumes that its overall organization is stable even in one place and time), I simply acted "as if" the piece of text would naturally belong to its assigned context of discourse in the language into which it was translated (without exception, from German to English).

From a translational point of view, it would be interesting to reflect on this another time, especially in cases in which the fragment selected from an English language publication was itself a translation from another language, or had been authored in English by an author whose native language is not English. From the multilingual terminological point of view, it is interesting to note that the fragments translated for the thesis seem to fall into two categories, each of which was treated with a somewhat different approach:

1. Authors who habitually write in both English and German, e.g. Ernst von Glasersfeld, Gerhard Budin; in this case, the preferred terminology of the author was taken from texts written in this language, which on the occasion produced a digression on the possible intent of rendering a term given other choices (7.1); the case of terminology science was in fact used as a springboard to enter the problem of subject delimitation and the work in general, whereby I was astonished to find that the term, though unsuccessful, has indeed seemed to have seen a back-translation (or tertiary term formation) by which it re-entered its "home" context as a synonym.

2. Translations of fragments from texts which seemed to have been constructed by authors who seemed to be strongly under the influence of the gestalt of a culture-bound *codification mentality* (whether one sees it as distinct "intellectual style" or not; I am still undecided with regard to the quality of this idea) and which proved problematic both in terms of their syntax and argument, not the least because oftentimes translation was used in conjunction with ellipsis to reduce the bulk of the fragment. The idea here was, in terms of translation, to ideally convey the tenor of the utterance while otherwise presenting it in as reader-friendly a way as possible. Terminologically, the real problem was the presence of units that seem to signify "thick concepts" in an anthropological sense, expressed in terms such as *Geist*, *Erkenntnis*, and *Lehre* for which I more often than not opted for an "open" translation strategy that left the German term bracketed, followed by two or more possible translation choices which the reader might interpret, and sometimes glosses. This was particularly salient in cases where any of those terms listed formed part of a compound labeling a disciplinary context, which I partly tried to spell out in chapter 8, with the intent of gisting and annotating a two-way interchange conducted in German as a prelude to the application (and therefore testing) of my theoretical models and fictions.

Although (unfortunately) under-emphasized in the thesis, I would like to use this space in order to flag up the value of translation as a philosophical and terminological method in its own right. Who knows whether there had been a philosophy of radical of constructivism if Ernst von Glasersfeld had not reflected on the epistemological implications on multilinguality and translation?

> When we started to read Balzac and Maupassant and Anatole France, it dawned on us - perhaps because our teacher was a master at circumscribing what could not be translated - that *to get into another language required something beyond merely learning a different vocabulary and a different grammar. It required another way of seeing, feeling, and ultimately another way of conceptualizing experience.* This was no more than a dim notion then, but it persisted because, after I had graduated from high school, it helped to make the multilingual world in which I lived a good deal more intelligible and congenial. Ingenuously and certainly without formulating it, I had stumbled on a way of thinking which, as I discovered some twenty years later, was the core of the well-known Sapir-Whorf hypothesis. Put in the simplest way, this hypothesis states that how people see and speak of their world is to a large extent determined by their mother tongue (Whorf, 1956). In retrospect, *I think, it was my firsthand experience of this phenomenon that prompted my interest in epistemology.* If language had something to do with the structure of my experience and therefore to some extent with the world that I considered to be real, I could not for long avoid asking the question, what the real reality behind my languages might be like and how one could know and describe it.
>
> Glasersfeld, 1995, p. 3

If we give credence to the Whorfian hypothesis, then learning foreign languages and the activity of translating may provide an important opportunity to push the boundaries of our experiential world, besides becoming aware of our own stereotypes and cultural categories, which I think is beneficial to everyone in particular and society at large.

Bibliography

This bibliography has been automatically generated and contains all reference data used in the main thesis. It may contain reduplications – a problem that especially affects edited collections – and other anomalies such as stray comments or annotations to bibliographic records. These are technical problems that stem from the software used to write the thesis and which cannot be suppressed at a reasonable cost of effort. Nevertheless, all due care has been taken to ensure that the bibliography is as complete and correct as possible.

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