



# Virtual Landscapes

The Modern era (2000-2012)

by Umran Ali

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## About The Author

Umrans Ali, BSc, M.A, PGCHE, FHEA, was born in 1978 in Manchester, England. After graduating (BSc in 2004, and later with an M.A in 2005) Umrans worked as a freelance 3D artist & creative designer, and then as a visiting lecturer and private tutor teaching across Art & Design, 3D, CGI and Animation. Umrans later joined the School of Media, Music & Performance at the University of Salford as a lecturer in creative media, and taught across a variety of areas from design, production, & project management for video games, specifically around creative design and production of virtual environments.

From 2006 to 2012 Umrans acted as Programme Leader for the BSc (Hons) Computer & Video Games programme at the University and was responsible for curriculum design, programme management and developing the programme's partnerships with a variety of major industry partners. Many of Umrans's students since, have gone on to work in the creative industries including the videogame industry

Umrans's freelance work included several large projects ranging from PlastiCity; a Will Alsop driven project visualising the regeneration of Bradford city centre in a fully interactive form, the Virtual Jean Claude virtual knowledge space project recreating the French composer Jean Claude Risset, into a 3D avatar, to working on projects in partnership with UK based organisations such as the DarkHorse organisation, BT and the Foundation for Art & Creative Technology (FACT).

Umrans currently works as a senior lecturer in creative media, at the University of Salford. and continues to explore virtual natural environment design through his teaching and research, maintaining a deep interest in the meaning, impact, and design of natural spaces.

In his spare time, Umrans is a keen videogames player, and landscape photographer. He lives in Cheadle, Manchester, with his wife and two children.



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# Preface

The story of how this book came to be can be traced back to my early childhood. As a young child growing up in the grim, dirty streets of the inner city of Manchester in the 1980's, my desire to escape the dull concrete and brick surrounding and play in natural spaces like most children was particularly strong. However living in such an environment presented certain challenges, centered around availability and access. Natural spaces were incredibly limited, with the only natural space accessible being a small forested area (which was unfortunately cut off by a 12ft enclosed wall with a single locked wooden door). Around this time I was given an Atari and copy of *Centipede*, and I became hooked, not knowing this would ultimately end up developing into a lifelong interest. Videogames offered me the possibility to play, albeit in a virtual space, and experience the natural spaces I craved for. My interest in the natural environment grew from those early days, and with the explosion of computer & video games over the years, and the phenomenal surge in popularity of the medium from a niche to mainstream culture, I was exposed to increasingly richer, deeper and more extensive virtual natural environments.

*Virtual Landscapes* developed through a combination of both a personal interest and observations I made over the years of the different communities that developed around particular games. What struck me over the decades since, was that particular aspects of videogames such as characters, player interactions, immersiveness, started to increasingly become the centre of discussion and debate, evolving into academic discourse and analysis. However within this there appeared to be a mismatch between one aspect that gamers were sharing and reflecting upon and what became a focal point that designers and academics were analysing; virtual natural environments. This was something that held my interest for nearly three decades, and something that fellow gamers were sharing, discussing and reflecting upon, this was definitely something I felt needed be discussed and shared with a wider audience.

When I set out to write this book, little did I realise that it would end up extensively consuming my thoughts and my time for over three years. Holidays, anniversary's, and weekends, were all consumed. What had started as a intention to a create short visual timeline of virtual natural environments in games I had encountered grew exponentially as my interest seemed to take on a life of its own. I would often recollect the games I had played, for one to suddenly jump out, or would share my experiences of these spaces online with fellow gamers revealing an important old game I had missed, I knew these had to be to be illustrated and shared.

The process of extracting these virtual spaces has not been straight forward, many of these titles were abandoned, years sometimes decades earlier, even before the technical task of extracting the virtual landscapes had begun I was tasked with tracking the actual game first. Once this had been completed, technical hurdles were often marked with moments of joy, frustration, and revelation. Some of the landscapes proved relatively easy to extract, others extremely frustrating with various attempts over several months met with failure after failure.

However moments of late night revelation would soften inspire a new direction or the development of a new technique, and would suddenly yield the result I had struggled to acquire. The final outcome was never a certainty, It was always a nervous moment with the final press of the 'render' button, which would compile all the extracted 'raw' images for a particular virtual space into one coherent landscape. To suddenly see what you imagined that particular landscape to look like in a tangible, shareable form on the screen, was both a satisfying moment of joy and relief, one that spurred me on to continue the work.

Sharing the initial work was met with apathy and did not seem to resonate with anyone but myself, and that did for a while did make me wonder, if the endeavour would end up becoming a waste of time, and perhaps would I better of doing something else, however I soon realised that my ultimate goal was to share a personal and collective experience no matter the final reception of the completed work. It's use in my teaching for example would be more than enough of a justification of the time and energy spent. Sharing the work later on I realised the initial fear was misplaced, as it appeared to resonate strongly with people, mainly with gamers, but this was an encouraging start nonetheless.

The work has also led to the development of workflows around virtual photography. New tools & techniques in extracting rich unseen views of these spaces emerged during the creation of this work, which in many had parallels to traditional landscape photography (sourcing an environment, calculating the best angle etc..) , and I hope this work furthers these virtual spaces in becoming viewed as more than simply entertainment.

*Virtual Landscapes* stands in the first opening chapter of a something I believe will grow and revolutionise how we see and experience the world around us, and it is therefore critical for the minds of tomorrow to have access to what these virtual spaces looked like, how they were experienced, and what their impact was. Ultimately I hope the work stands as an digital archive preserving these spaces for future generations in the form of a visual repository

*Virtual Landscapes* has also strangely become a doorway for me into other disciplines such as photography art, and geology. Through these virtual landscapes I discovered traditional photography, been exposed to the works of John Ruskin, landscape artists such as Edwin Church, Turner and more. The work has also triggered an interest in environmental psychology, geology and how these disciplines can further develop virtual natural environment design. The work has also heightened a deeper appreciation of natural spaces, an appreciation of the tranquillity, beauty and sublime nature of natural landscapes.

My hope for this work is that it will to engage gamers and non gamers alike, inciting a critical discussion about the design, impact and meaning of these virtual natural spaces, and ultimately to further celebrate the natural environment. For gamers I hope this work captures some of the virtual spaces that have excited, enthralled and captivated our attentions for over three decades. For designers I hope this work develops an appreciation of the impact of these spaces and further develops natural environment design as a sub-discipline, one that future designers would evolve, giving rise to new possibilities in the medium.

In addition I would want the work to attract and engage non gamers, who share an interest in the natural environment, to foster an appreciation of these new virtual natural spaces, and to recognise the potential of videogames to connect a new generation to what typically maybe perceived as something relatively old fashioned and outdated

Lastly, I would like to dedicate this book to my dear wife, Faiza for her patience and understanding, my daughter. Mariyam (who one day I hope will understand why daddy was always busy working.....) and my young son Zayn, and to all who have motivated and inspired me to work on this.

Umran Ali  
2012



# Introduction

The magical essence of natural landscapes since the dawn of man have been a source of intrigue, wonder and inspiration in art, philosophy and literature. With each new era in civilisation, new methods of creative expression have been used by artists, designers and writers to capture the rich natural landscapes, and with the 21st century and the emergence of new interactive technologies, this innate desire is being expressed through the digital domain.

From the strange giant mushroom forests of Morrowind, the Archipelago islands of Zelda Wind Waker, to the tropical underground caves of Phantasy Star Online, Virtual landscapes have enthralled, captured and engaged player imaginations for over 30 years. *Virtual Landscapes* is a three part series attempting to, for the first time, visually illustrate, share and critically reflect upon the unique, virtual natural landscapes within Computer & Video Games, through previously unseen, digitally enhanced and panoramic forms.

Natural landscapes have long been a focal point of interest within the natural environment. It has been through reflections either through art, literature, sculpture we see a glimmer of immortality- one that granted a level of persistence to these landscapes in the minds of individuals and society over time, these landscapes were, in essence forever preserved, through art & literature even though the actual landscape, either through adverse natural or manmade change may have been lost centuries before.

The virtual domain is however different, the digital landscapes, are in a sense more vulnerable and prone to being lost than their physical counterparts. The virtual landscapes are in a sense, exposed to the ravages of time since they do not occupy a fixed physical space, and the virtual space that is occupied is limited to fixed relatively short window of time dependant on factors such as the genre of the game, and the platform (and it's own lifespan) These factors have meant that many of these virtual landscapes now remain uninhabited, abandoned and largely forgotten. *Virtual Landscapes* in this respect functions a digital preservation archive, one that attempts to visually record these unique environments and the landscapes contained within, and to present how, over time they have evolved and developed into what we see, play and interact with today.

*Virtual Landscapes* is not a substitute primary reference for the natural environment (in which there can be no substitute for the real thing), but as one that acts as a complimentary reference in addition to primary landscape reference material. The books also function as body of work that attempts to bring a rich visual chronology to a much underrated yet vital aspect of environments within computer & video games.

*Virtual Landscapes* attempts to preserve some of the unique and wonderful virtual natural environments using modern day digital restoration tools and techniques, as such certain pieces throughout the series have undergone restoration processes such as up-scaling, digital enhancement & digital cleaning. There has been a commitment throughout the work to present an authentic aesthetic view of the natural environments in computer & video games over 30 years but *Virtual Landscapes* is not about absolute pixel by pixel authenticity, and in many cases slight digital manipulation has been required to restore particular area of the landscapes (where the menu/user interface/other anomalies have prevented capture of that particular section) in an attempt to bring the essence of that particular landscape to the audience.

One could argue that the use of secondary sources in creating a new body of work should be avoided, since a process of reductionism is used in creating the artefact (i.e. one takes a large source of visual and other references to inform the production of an artefact) and by using this 'filtered interpretation, a risk is taken in restricting the richness & originality of the new body of work.

However it should be noted that these virtual landscapes are the final result of a long, often meticulous, process of research, design & testing: one that involves the crafting of these spaces through a combination of selected visual references through cycles of research and iterative design and testing, although their final result cannot be used purely as a substitute for the natural environment they can serve as a powerful complimentary reference aid in developing the next generation of virtual environments and landscapes. I hope this work also serves as a collated set of visual references that students can use to both appreciate the evolution of virtual natural environments in games, and one that aids them in the design, synthesis and construction of these spaces in their own creative works.

The visual chronology of these landscapes over thirty years also goes beyond a pure aesthetic appreciation of these virtual spaces and tries to consider aspects such as the environment design & construction process and seminal occurrences as well as the significance and impact of culture in how we respond to these virtual landscapes. In showcasing these often, spectacular landscapes various elements that could potentially distract the viewer from the landscape (such as the user interface, the player character, field of view, menu's, etc... ) have been stripped away, by a process of careful editing, cheats codes/debug menu's etc... to reveal the natural environments underneath.

I have also tried to make a distinction between the virtual, natural environment and natural landscape. As geographer, Jay Appleton so eloquently put it "*Landscape is not synonymous with environment, it is the environment perceived, especially visually perceived.*" My approach in understanding the design, construction, and impact of these virtual natural environments is to visually reflect and analyse specific landscapes within the larger virtual environments, and ultimately my work is to highlight the importance of these virtual landscapes in creating richer and more immersive virtual spaces. I have also attempted to, where possible visually illustrate these landscapes through panoramas, as I feel if landscapes are the environment visually perceived then, a panorama is the ideal visual representation of a landscape.

The selection of landscapes throughout the series is by no means indicative of greatest virtual landscapes that have existed, but a combination of both iconic game landscapes that the gaming communities generally hold in high regard and a personal selection based on landscapes I have encountered over the last 27 years.

The representation and evolution of natural environments in computer & video games can broadly be defined by three relatively distinct era's , which I have defined as the *Embryonic Era* (from 1980-1990), the *Transition Era*: (from 1990-2000), and the *Modern Era*: (from 2000-present).

# Virtual Landscapes

## The Modern Era (2000-2012)

The modern era, heralded a leapfrogging in both the design and technologies surrounding virtual environments, resulting in revolution in complexity and richness of virtual natural environments. The early indicators during the transition era of height becoming the differentiator in modern 3D natural environments is realised, game environments are now fully simulated as detailed three dimensional spaces with players being able to move on any axis. The size and scale of these natural spaces also increases exponentially. The compartmentalization of the space within game environments, that was apparent in the transition era, reduces significantly, as players are now able to traverse a greater variety of natural environments (spanning several virtual square miles in some cases), with players being able to traverse high mountains , dense forest , to underwater caves/tunnels without the need to formally progress through structured 'levels'.

Early indicators of trans-disciplinary approaches towards natural environment design start to emerge. Bethesda's *Oblivion* illustrates this as the developers approached the University Of Maryland's Geology department to help inform the design of the environment, in this case natural erosion of rocks, for *Oblivion's* natural landscapes.

Complex environment systems further evolved, developing alongside the form (geometry) and aesthetic (graphics) elements of the natural environment. Weather systems now simulate a variety of complex weather and seasonal patterns. *Crysis* and *The Witcher* illustrated weather systems that now included fog, dust, complex clouds simulations, and unique weather phenomena (whirlwinds, tornado's etc..) The concept of weather and seasons developed further and deeper into virtual natural environment design. The use of seasonal changes went beyond changes in the environment aesthetics into design considerations, i.e. a seasonal change provides both a chance for a designer to link an environmental change to gameplay, and for players to explore an alternate environment. *Soul Reaver 2* illustrated this, as players were able to experience gameplay differently in the same natural landscape , but within different seasons (i.e. spring & winter)

Addition systems around environmental simulations such as dynamic flora (i.e. physics systems linked to flora in order to simulate movement linked to wind speed) are now integral parts of the natural environment simulations. Early indicators (such as the Dunia Engine) point to dynamic flora growth cycles being a future implementation within natural environments.

The modern era also marked a major milestone with water simulation no longer presenting a major technological constraint, the result of which is now a wider, greater, and richer use of water bodies in natural environments. Rivers lakes, and other water bodies have become more prevalent, with the transition between water bodies and the terrain done much more subtly. Games such as *Zelda Wind Waker* highlighted both the technological developments and a design progression away from virtual natural environments being solely based around a large central landmass, as players navigated a natural environment that was based around a large ocean occupied by smaller archipelago islands.

The cultural domination of western influenced representations of the natural environment also appears to be shifting; games such as *Phantasy Star Universe* demonstrated the growing popularity of home grown development coupled with a growing preference of players for culturally aligned content.





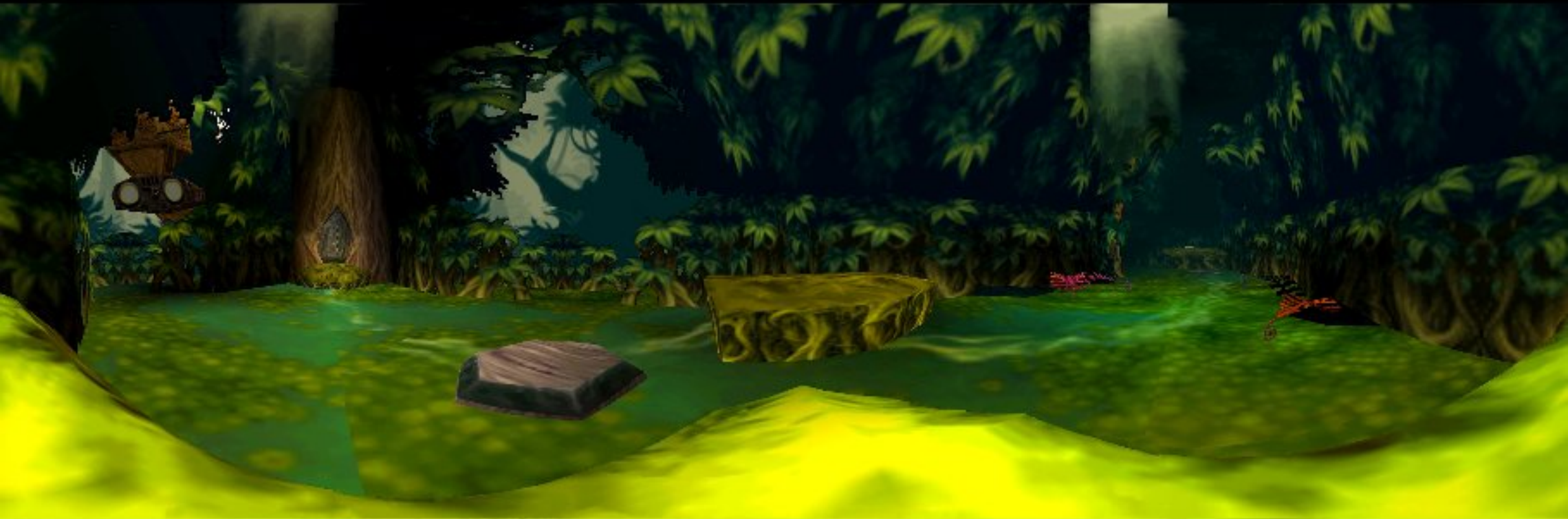
The Modern Era  
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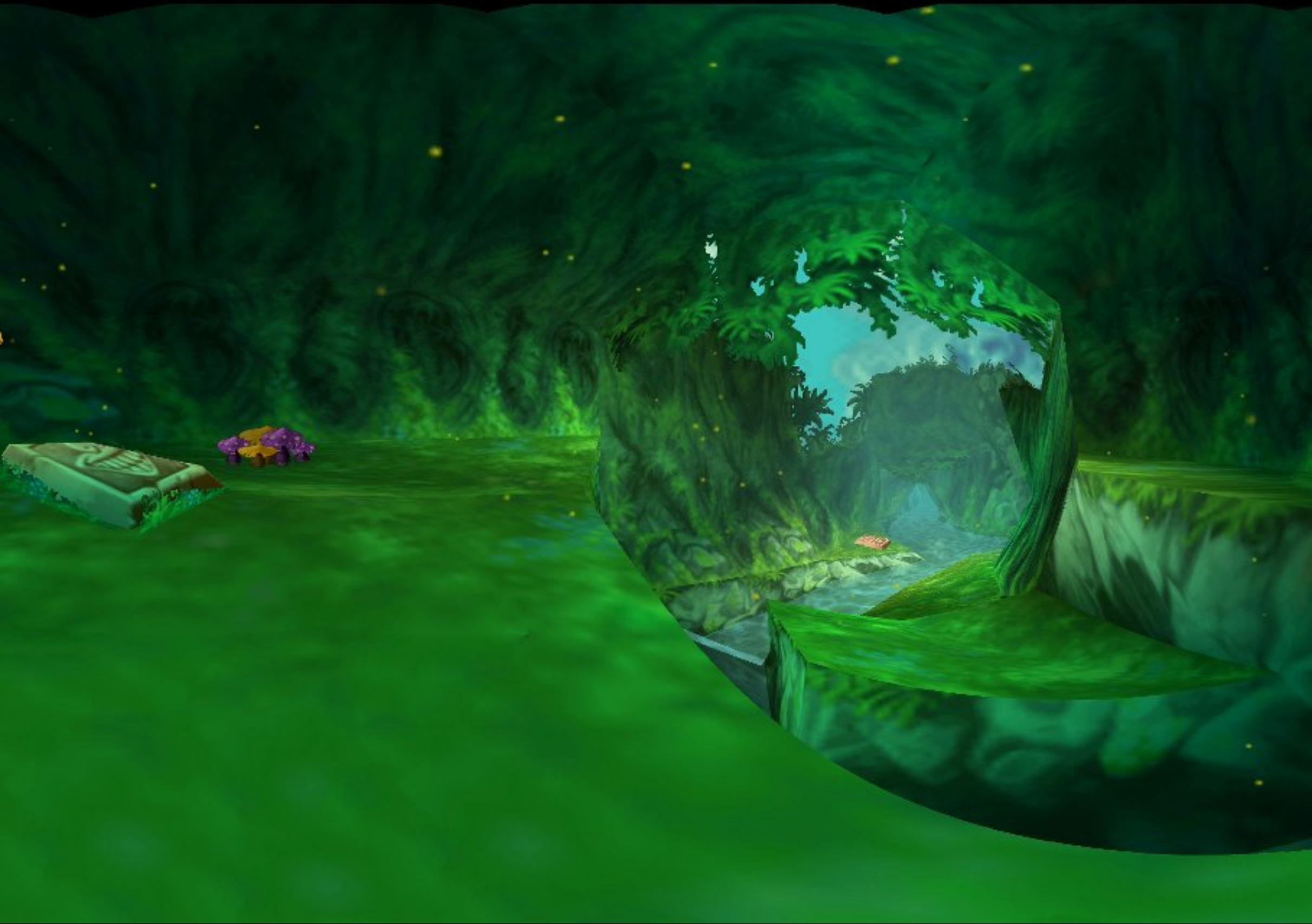
**Title:** *Rayman 2: The Great Escape*  
**Platform:** PC-Win  
**Developer:** *Ubisoft* **Publisher:** *Ubisoft (2000)*





Ubisoft's *Rayman 2* illustrated the relatively quick evolution in virtual environments into the 3D domain. Originally a 2D game (similar to many 2D side scrolling games from the transition era) *Rayman 2* evolved into a colourful 3D platformer, one that was noted for its successful transition into 3D, convincing highly stylized fantasy environments, and its universally praised games design and execution by gamers and critics alike.









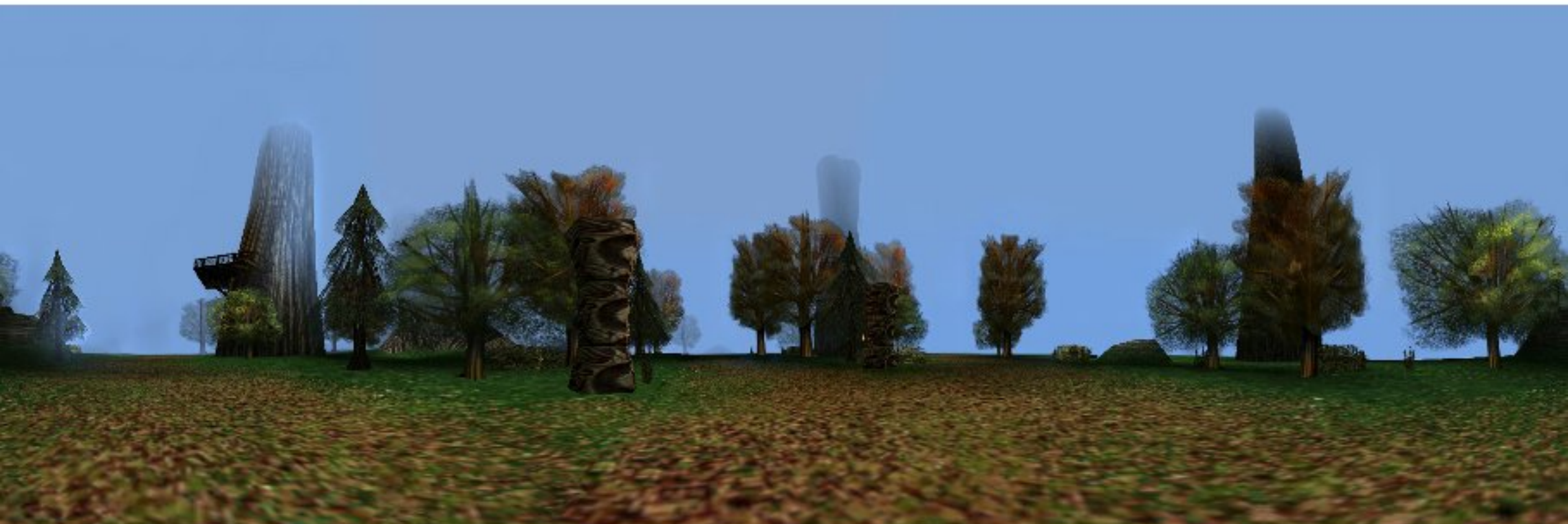
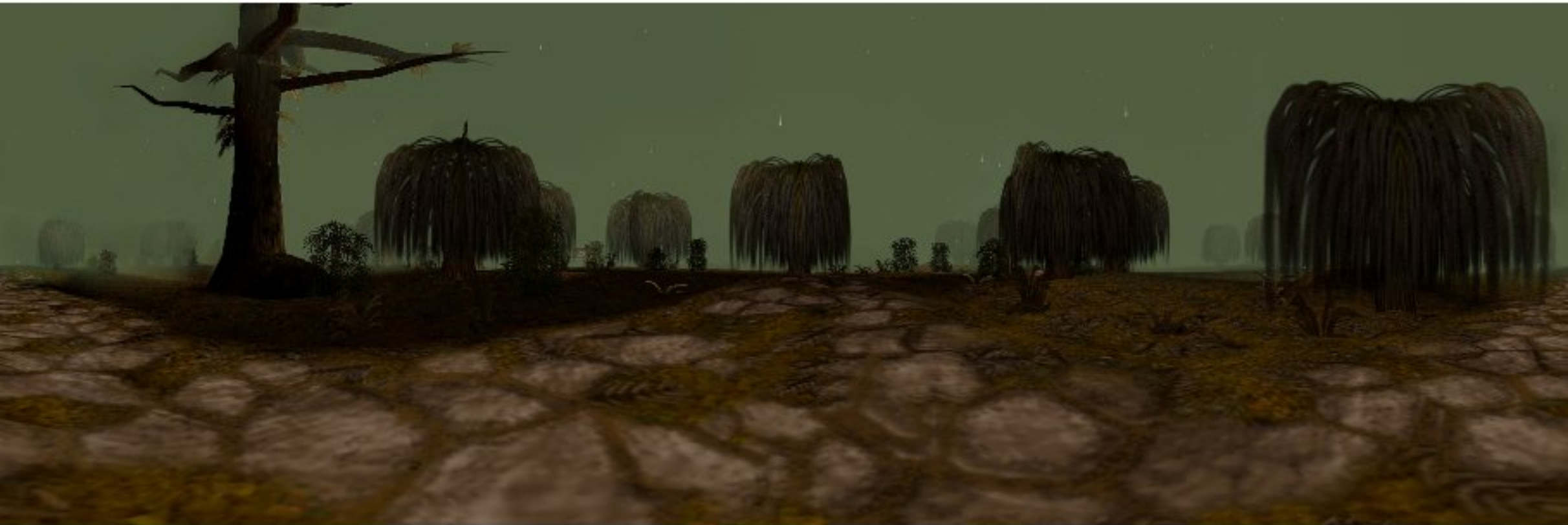


**Title:** *Wizardry 8*

**Platform:** PC-Win

**Developer:** *Sir-Tech*, **Publisher:** *Sir-Tech* (2001)

The eighth game in the long standing Wizardry series, Sir-Tech's computer role playing game was set in the world of 'Dominus', with the player being tasked to find three magical artefacts spread across a vast world. *Wizardry 8* was the first in the series to utilize a real-time 3D environment, one in which players could use to their advantage (players could move during combat, using the terrain to help avoid or defeat enemies). The game illustrates the conventional approach in both environmental design & and execution; the environment consisted of a relatively simple and uniform terrain, with a sparse layer of tree cover (grass was too complex to be recreated as a 3D model and as such was implied by a flat green texture on the terrain) , and finally a simple day & night system with rudimentary weather effects.







**Title:** *Phantasy Star Online*

**Platform:** Dreamcast

**Developer:** Sonic Team, **Publisher:** Sega (2001)

Sonic Team's *Phantasy Star Online* (PSO) was one of the first massively multiplayer online roleplaying games on a console, specifically the Sega Dreamcast, and continued Sega's previously established *Phantasy Star* series of games. The game was set on the fictional planet 'Ragol' where PSO and all subsequent PSO games (there were six in total over five years) took place. Players took on the role of an explorer, one who could explore the planet either alone (via the offline mode) or collectively with a group of fellow players via the game's highly praised 'online mode'

The fantasy environments ranged from the forest area, the underground caves, the mechanical mines and finally the dark ruins. Each subsequent 'Episode' introduced additional areas to explore, such as the jungle, mountain, and desert areas.









The underground caves in Phantasy Star Online (PSO) were remarkably reminiscent of the 'Genesis Cave' from Star Trek 2: The Wrath of Khan; a large, artificially-constructed cavern under the surface of a lifeless planetoid. The underground caves in PSO were complete with strange cascading waterfalls creating shallow emerald-blue pools, with arched tree's sprouting under the cramped hollowed out caves. The unusual combination of flora and fauna one normally associates with the surface, but within a subterranean environment creates an interesting play on expectations of a subterranean environment (i.e. a dark, inhospitable environment, limited to nothing more than fungi growing in stagnant pools of water) versus what PSO actually delivers with a bright, almost tropical habitat that is teeming with plant and animal life.









Traditional representations of natural landscapes have been known to trigger a psychological response in those viewing them, however one wouldn't expect their virtual counterparts to achieve the same effect. *Phantasy Star Online* had several unique landscapes that triggered very personal memories and associations at certain points. It was an unusual music and visual combination I encountered in the mountain region overseeing the cliffs, with the intense dusk sunset playing to a melancholic music track that seemed to trigger a somber reflection on past real sunsets from my youth; moments basking in the final rays of the setting summer sun came flooding back when I stood on the virtual cliff in PSO; the facsimile was clearly artificial since this was a mere 'virtual' representation, but the emotional response was certainly real, unusual and unexpected.

















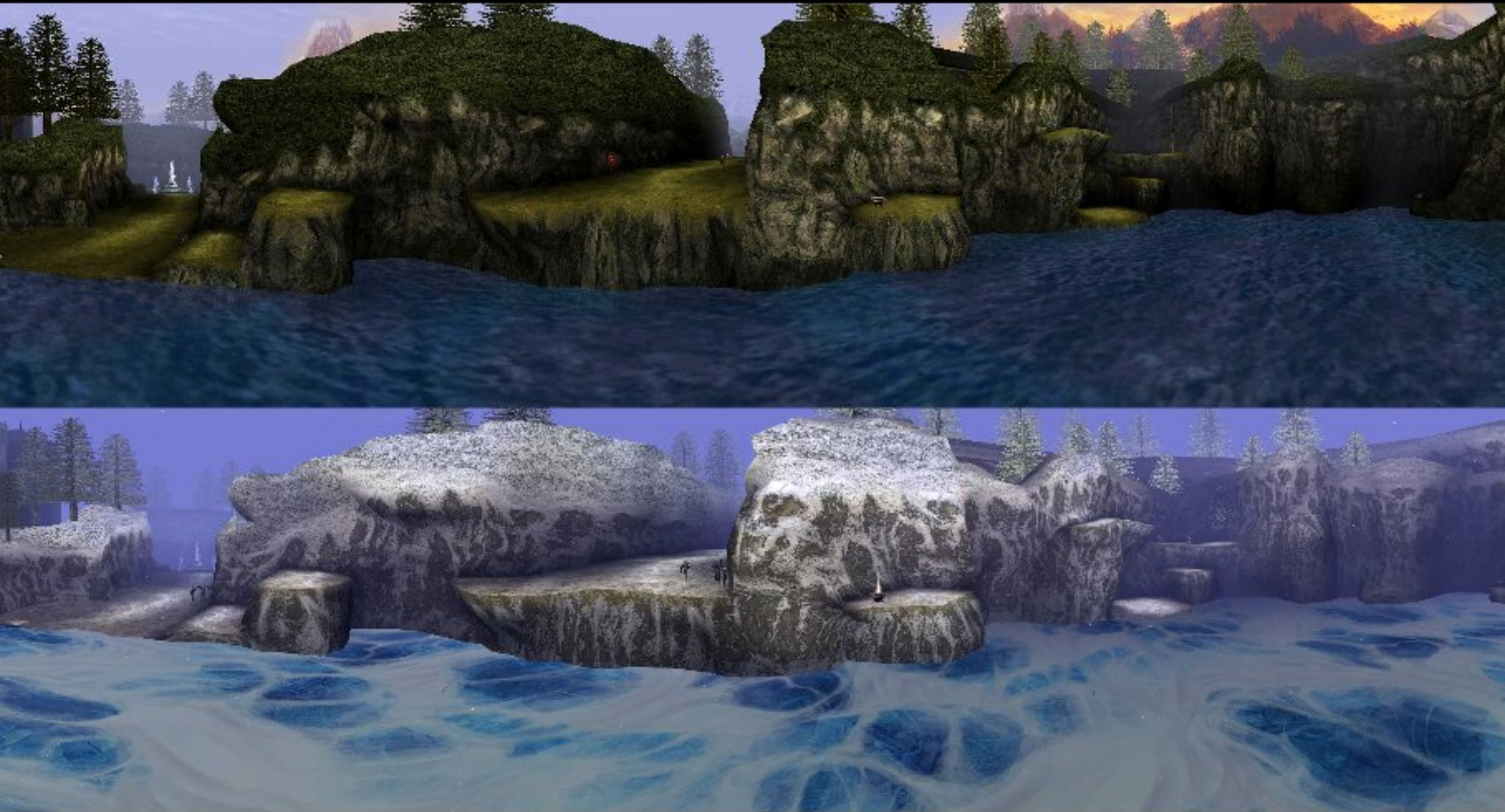
**Title:** *Legacy of Kain: Soul Reaver 2*

**Platform:** *PC-Win*

**Developer:** *Crystal Dynamics*, **Publisher:** *Eidos Interactive (2001)*

An action adventure game, *Soul Reaver 2* in which players took on the role of the protagonist 'Raziel', on a journey through the corrupted lands of 'Nosgoth', doomed to eternal decay by the antagonist Kain (whose story was established in the previous *Legacy of Kain* games). Nosgoth was presented as a dark fantasy medieval land, one that gone from the rich splendour of the past to the rotten, dark, decaying and infested lands imagined very effectively in *Soul Reaver 2*. One could imagine the story's narrative simply by exploring the landscapes in the world, and conversely, reading the story's complex narrative, it was easy to imagine what Nosgoth's lands had transformed into. This, close alignment between the natural environment aesthetics/design and the narrative created a powerful immersive experience, one that served to reinforce and tie all the elements of the game into a coherent, believable world.





The game illustrated how seasonal changes in the environment could create wonderful opportunities for using the landscape as a gameplay aid, by altering the physical nature of the environment. In Soul Reaver 2 the underwater lake represented a part of NosGoth, when the player moved to a different point in time within the game (which happens to be in winter) the water area was now frozen and the water surface became a new area to be explored/conquered. If this were to be extended, one could imagine giving the player control of the seasonal changes (and the resulting changes in the environment) which could allow a single landscape to be experienced differently depending on gameplay or the narrative.











**Title:** *The Elder Scrolls III: Morrowind*

**Platform:** *PC-Win*

**Developer:** *Bethesda Game Studios*, **Publisher:** *Bethesda Softworks (2002)*

Bethesda's third installment in the *Elder Scrolls* series, continued with the open world action role playing game genre following on from its predecessors, *Daggerfall* and *Arena*. *Morrowind* takes place on Vvardenfell, an island in the Dunmer province, located in the far northeastern part of Tamriel, the fictional continent on which all the *Elder Scrolls* games take place on. Vvardenfell was an island sub-continent within Tamriel.

The island itself was largely dominated by the 'Red Mountain'; a giant active volcano located in the center of the island, which constantly spewed out choking red fumes and smoke. The island's landscapes were varied ranging from rocky highlands, arid wastelands, to the swampy wet coastal regions, all filled with a variety of strange and unusual flora and fauna.





Morrowind was one of the first free form environments that many players felt they had a real sense of freedom: the freedom to wander off a beaten path, away from the main quest, wandering to explore and see how far one could travel in any direction, and it felt like an endless, vast never ending journey(although in reality it was quite a limited world space compared to modern equivalents, and also it's predecessors). Morrowind's natural environment although now crude by modern standards was richly atmospheric, there was more than one occasion when I would simply stare at the the beautiful transition from the nebula filled nigh sky to the tranquil pink dawn, there was no rush to find the next location, or to progress the main story, but just to experience the wonderfully strange yet familiar natural environment.





Morrowind was one of the first games that many players noted they really felt they experienced the day & night cycle within a game : this was more than a simple sudden colour change indicating nightfall for instance. Dusk would creep up slowly as you wandered the tranquil island of Vvardenfell, within a few game hours the beautiful sky would be littered with stars and picturesque nebula, only to gradually fade, with the early morning sun washing the dark night away. I, like many players, became transfixed with experiencing changes such as these in the landscapes, rather than pursuing the primary goals set in the game, and 'map filling' quickly became an obsession. Filling the in game map with useful local and world map information, to identify landmarks and waypoints and to establish routes to and from locations became more appealing than following the narrative and engaging with the games primary quests













On comparison with latter 3D natural environments, the landscapes within Morrowind were shockingly empty and devoid of what one would expect in a natural environment. The environment consisted of nothing more than simplified terrain (which was limited to the generic soft undulating hills), with a few rounded rock formations and a basic level of tree cover, which consisted of a combination of normal tree types and strange xeno-tree's (giant fungi inspired hybrids), with the odd small shrub, scattered, however there was very little beyond this.

Morrowind was also noted for its dull green and brown colour palettes in its landscapes, these, some would argue gave the game an original and unique feel, others that it gave the game an "oppressively drab" look. Nonetheless the game was well received and a growing army of fans started to create modifications (*these were additional assets such as models, textures etc...created for the game world*) for the game. A large percentage of these 'mods' were aimed at improving/adding to the environment. Typical 'mods' would often focus on character, in-game object or gameplay improvements & changes, however, the large number of landscape mods for Morrowind indicated that players were engaged with an aspect of the game not typically recognised as a main focal point of interest, and perhaps this was something that game designers should have recognised earlier, as a key unique selling point, and further developed the design around this.



**Title:** *StarFox Adventures*

**Platform:** *Nintendo Gamecube*

**Developer:** *Rare Ltd*, **Publisher:** *Nintendo (2002)*

Following on from Starfox 64, *Starfox Adventures*, an action-adventure game, followed Fox McCloud's journey through the Lylat system onto the remote 'Dinosaur planet'. The primary goal was to restore the planet, after 'pieces' of it were suspended in orbit. Environments in the game ranged in both type and climate, starting from the central grassy hub of Thorntail Hollow, the cold icy lands of Snowhorn Wastes, the swampy Lightfoot village, and the strange Moon mountain pass, to the sandy seaside Cape Claw.









*Starfox Adventures* was visual joy to play, the environments were all visually intense, with strong colour casts being evident in all the specific areas. Colour can be an interesting variable to play with in environment design, in *Starfox Adventures* the strong, the almost over saturated colour casts, helped gel the natural landscapes together. Colour casts can also set the mood, helping to link the environment to the narrative in order to create a more unified experience.

















**Title:** *The Legend Of Zelda: The Wind Waker*

**Platform:** *Nintendo Gamecube*

**Developer:** *Nintendo EAD*, **Publisher:** *Nintendo (2003)*

*Wind Waker*, the tenth installment of the 'Zelda' series continues the adventures of Link and Zelda, in search of the magical 'Tri-Force' (a sacred relic found in all Zelda games) in the fictional world of Hyrule. *The Legend of Zelda: The Wind Waker* is a unique game in many respects, a classic Zelda game in many ways, it was also both beautiful to play, and to explore; players experienced a unique natural environment in *Wind Waker*, a game that challenged the traditional environment design approaches to the balance between landmass and water.





The relationship of water to land is an important design consideration in any game that uses a representation of the natural environment. *Zelda: Wind Waker's* natural environment was relatively unique given the history of games using natural environments. *Wind Waker* didn't use the conventional approach in natural environment design: i.e. basing the game world around a central land mass, it reversed the conventional balance of land to water (i.e. a large land mass with pockets of water) to one where no real large central landmass in the game existed, but rather a series of archipelago islands with gameplay taking place across the world through 'island hopping' wind waker's world , which were composed of forty nine islands in essentially a 7x7 square world grid.





There is a real sense of exposure felt in exploring Wind Waker's 'Great Sea', as land was given as a reward rather than a expectation by exploring deeper into the world. Exposed to the elements whilst boating around the Great Sea and glimpsing an a island in the distance, altering heading to finally set foot on a strange unknown shore, and finding a new island to explore often evoked a sense of wonder mixed with relief. The islands themselves weren't huge, often being home to nothing more than a few palm tree's and perhaps a key game item/sub-level. This however was more than enough to keep the player keen to explore further using each discovered Island as a launching platform (starting from the aptly named Outset Island) to the areas such as Three Eye Reef, Gale/Overlook Isle and the Forest Haven.









The use of multiple small islands spread across a vast sea appears to go against the traditional design paradigm of avoiding large spacing out of areas in the game world and thereby introducing 'travel boredom'(common in open environment games, where the player must travel large distances between goals, often resulting in boredom) . Zelda Wind Waker is in fact the reverse with the player being forced to set sail and endure significant amounts of time in searching for a landmass to land and explore, the reception from players appeared to indicate it works, extremely well. Players earned both the opportunity to explore new land masses, and the potential of finding a new quest item to aid them in their journey.

















**Title:** *Battlefield Vietnam*

**Platform:** *PC-Win*

**Developer:** *Digital Illusions Canada*, **Publisher:** *Electronic Arts (2004)*

The second in Electronic Art's *Battlefield* series, the online multiplayer shooter, allowed gamers to play on a variety of maps (distinct set areas of the game often based around a theme, whether fictional or real). In the case of *Battlefield Vietnam*, these included actual historical settings such as Fall of Saigon, Ho Chi Minh Trail, Operation Flaming Dart and the Battle of Khe Sanh. The maps ranged from beaches to jungle inspired from these historical settings from across Vietnam's diverse geography.

















**Title:** *Fable: The Lost Chapters*

**Platform:** *PC-Win*

**Developer:** *Lionhead Studios*, **Publisher:** *Microsoft Game Studios (2005)*

Fable takes place in the green lands of Albion, a patchwork of small cities, towns and hamlets. The northern region is home to the largest town, Bowerstone, the central region of Albion is home to the forests of Greatwood, Silverpines and Deepwood. To the south lie the vast dark marshes and swamps of Wraithmarsh and Darkwood. To the east lies the mountainous regions. To the west across the sea lay the islands of Hook Coast and Witchwood Isle, and to the very north the cold tundra lands, home of the Lost Bay and Snowspire village





Albion's landscapes had a quintessential English countryside feel to them; from the long winding roads complete the old wooden street signs and low cobbled stone walls, to the subdued autumn forests complete with the brown and yellow shaded leaves scattered across the forest floor, and the various hamlets scattered across the natural environment, Albion was strongly imbued with a *Ye Olde* theme. The forests in Albion appeared to be populated with tree's that were consist with the world design(i.e. one that mirrored England in the Middle Ages) oak, birch and elm's gave a European feel to Fable's environments.





Fable took place in the clichéd *ye olde* English village, and in this instance the specific landscapes gelled with the narrative and game, particularly well. The cultural element of Fable's world when coupled to how the natural landscape was visually represented is a powerful example of how that alignment when carefully composed can create wonderfully, deep and believable, immersive virtual natural spaces. Fable's forests has a very strong sense of familiarity, they felt like a typical English forest in late autumn, which is a testament to the skill of the designers and artists in creating this rich, fantasy world.

















**Title:** *The Elder Scrolls IV: Oblivion*

**Platform:** *PC-Win*

**Developer:** *Bethesda Game Studios*, **Publisher:** *2K Games (2006)*

Set after the events of its predecessor, *Morrowind* in 2002, *Oblivion*, an open world role playing game, was set once again upon the fictional continent of Tamriel, this time in the central province of Cyrodil, also known as the Imperial Province. Cyrodil, a rich and varied environment was made up from several regions around the central lake Runmare, in which the island Imperial city, capital of Cyrodil, could be found. Cyrodil was also made up from other distinct regions; the Colovian Highlands; a forested region to the west of the Imperial city, the northern Jerall mountains, The Nibenay Basin; a vast lowland region which makes up most of Cyrodil to Blackwood: a marshy swampland in the south.





Bethesda's fourth game in the *Elder Scrolls* series was a pivotal turning point in natural environment design. The developers as part of the design process, went beyond the internal development process by visiting University of Maryland to study geological processes such as erosion, growth of plants, and meteorology. This attempt marks a pivotal point in natural environment design with the developers actively seeking to improve the environment design by combining a non-conventional discipline with environmental games design.

Todd Howard, executive producer for Oblivion summed this up " *The team at Bethesda actually consulted the University of Maryland geological lab in order to generate accurate algorithms for producing realistic environments. This also means that the forests in Oblivion are randomly generated meaning no two areas will be alike*"





Lessons from Bethesda's earlier Elder Scrolls game *Morrowind* were also taken onboard, from feedback on the unrealistic, smoothed over hand crafted hills of *Morrowind*. The driver for *Oblivion*'s landscape design was both uniqueness and efficiency; the vast landscape of *Oblivion* could not be crafted by hand (as was the case for *Morrowind* as this was far too time consuming, and therefore expensive). At the same time the landscape needed to be richer, and more detailed than it's predecessor, *Morrowind*.

*Oblivion*'s programmers developed custom erosion algorithms into terrain generation software, allowing a range of natural terrain from sharp craggy mountain vista's to softer undulating hills. The result was a vast, intricate natural environment composed of several identifiable sub-areas, each containing a particular set landscapes, however this did not come at the cost of the development team needing an impossibly sized team of environment artists & designers to create the world of *Oblivion*.









*Oblivion* demonstrates two important aspects of natural environment design; the first that going beyond visual reference by exploring disciplines around aspects of the environment (in this case exploring geology to inform terrain construction) can lead to a more believable, immersive environment. One wonders if this process were to be further explored, what other disciplines could be used to enrich the design process in creating the environment.

Secondly, *Oblivion* demonstrates the exponential growth of these environments are out pacing the corresponding size of the development teams, forcing the use of more and more procedural tools to be developed to automate processes once carried out by hand. Procedural tools development require a design process in themselves to develop, and again extrapolating into the future, one can imagine natural environment production being shared across several disciplines from programming, art, as well as design.









**Title:** *Call of Juarez 2: Bound In Blood*

**Platform:** *PC-Win*

**Developer:** *Techland*, **Publisher:** *Ubisoft (2006)*

A western themed first person 'shooter', *Call of Juarez 2* took place during the American Civil War, with the player taking on the roles of the outlaws, Ray & Thomas McCall. Utilizing the new Chrome Engine 4, the environments spanned 19th century mid-west (namely Arkansas) around a series of iconic landscapes that covered the ravaged war torn forests of Georgia, dusty dry deserts and ghosts towns, the American-Indian Navajo villages to the Aztec ruins of Mexico.









The natural environment within *Call of Juarez 2* is a lush, rich realistic world utilizing strong organic colour palettes, but on comparison, with other similar natural environment games, the world is remarkably drained of colour. This is only apparent with a side by side comparison, which highlights the lack of colour, a technique which is often used in film i.e. the desaturated colour grading that that gave a gritty visual realism to Spielberg's WW2 epic, *Saving Private Ryan*. Desaturating colour from natural environment results in a more realistic aesthetic (which can be used to lessen the impact and counter other elements which may serve to weaken realism such as physics, lighting etc...) and highlights the form and geometry better given the contrast that arises with it's use.





The lush greens and browns are strangely muddy and lacking contrast, the sky which one would expect to be a deep blue is in fact a muddy yellow-gray, reminiscent of a dull summer evening. This desaturated look was intentional and added a sense of realism to the world and the developing narrative, *Call of Juarez 2* wasn't the over-saturated, colour-cast, fantasy world of Starfox Adventures, but the believable American mid-west landscape during the American civil war. Colour is an element of natural environment design where the maxim 'less is more' can most certainly be true, if applied correctly and in sync with what the designers intend to portray the world as.





**Title:** *Half-Life 2: Episode Two*  
**Platform:** PC-Win  
**Developer:** Valve Corporation, **Publisher:** Valve Corporation (2007)





*Half Life 2: E2*, last in Valve's critically acclaimed *Half Life* series introduced the White Forest, a fictional mountain region, based in eastern Europe, where the player, Dr Gordon Freeman, battled the 'Combine' (a hybrid of alien, synthetic, and human elements). The environments were noted for their attention to detail, believability and how the White Forest's level design in particular was both expansive and claustrophobic.





**Title:** *The Witcher*  
**Platform:** *PC-Win*  
**Developer:** *CD Projekt RED STUDIO*, **Publisher:** *Atari, Inc (2007)*

*The Witcher*, an action role playing game, based on the book by Andrzej Sapkowski, introduced Geralt of Rivia, a 'Witcher' (mercenary humans that were genetically enhanced and trained to fight monsters; each witcher possessed a set of unique powers including alchemy, swordsmanship and magic) and the medieval fantasy kingdom of Temeria, one of the 'Northern Kingdoms' established in the books. Temeria's capital, Vizima a fortified wall city located on the shore of lake Vizima, is the largest city in the kingdom, surrounded by a variety of different landscapes from forests, swamps and marshlands.









CD Projekt Red Studio's *The Witcher* demonstrates a very unique set of natural environments. Perhaps it's the specific colour palette of the flora, or the glittering overcast thunderous skies which are wonderfully striking that seem to be reminiscent of the Scottish and Welsh landscapes. The late summer evening feel in the landscape above has an almost palatable feel of dread, a calm and beautiful sunset is often considered to be an idyllic setting, however in *The Witcher's* case, there is a creeping fear that something unpleasant is about to occur, akin to the opening of the horror film *Jeepers Creepers 2*, in which a young boy is suddenly chased across a field by a demonic creature disguised as a scarecrow that comes to life, in what originally appeared as a tranquil field setting against a late summer sun.









**Title:** *Phantasy Star Universe: Ambition of the Illuminus*

**Platform:** *PC-Win*

**Developer:** *Sonic Team*, **Publisher:** *Sega (2007)*

Phantasy Star Universe, an online action role playing game, continued Sega's *Phantasy Star* series of games, following on from *Phantasy Star Online* in 2001. The game took place in the Gurhal System, which contained three inhabitable planets: Parum, Neudaiz, and Moatoob. Each planet came with its own particular climate, Parum an earth like planet (home of the rolling green hills of the Raffon Meadow), Neudaiz a water planet (home of the heavily forested Mizuraki Conservation District, and the Agata Islands) and Moatoob (a dry harsh dessert planet, home of the Galenigare Canyon, the Valley of Carnage, and the Ice Caves).









The majority of natural landscapes one observes in games today are in fact often western loaded representations of the natural environment. Forests often exemplify this occurrence, most games that include a representation of a forest are based on tropical and boreal 'biome's', which can either intentionally or unintentionally trigger associations and memories based on the cultural experiences of the gamers viewing them.

Since the natural environment has the power to evoke these psychological reactions, designers should take into account the cultural dimension of these representations: a Japanese player may respond very differently to a virtual representation of an environment based on their actual physical environment. This in turn begs the question: Should natural environment designers therefore consider how these cultural dimensions of triggered memories/associations either reinforce or break the immersivness of the game in order to create more believable environments.









The Mizuraki Conservation District, on the planet Neudaiz, embodies a quintessential Japanese landscape in Autumn. The strong crimson reds from the maple and sakura tree's create a unique atmosphere, bringing a unique take on the classic western cliched forest landscapes found in most games. This autumn forest environment perhaps is inspired by the cultural experiences of the games artists & designers.

'Momijigari' an ancient tradition dating back to the '*Heian*' era (794-1185) was a refined hobby practiced by noblemen in ancient Japan. Momijigari, still widely practiced today literally translated to 'maple hunting'; a practice in which it is customary to visit forests in Japan around autumn to view and admire the tree's turning deep and rich shades of red. The Japanese maple tree in particular, takes on rich and deep vibrant shades of red in Autumn, coupled with the sakura's tree's, Japanese forests in Autumn are often vibrant shades of pink and red. This cultural phenomena demonstrates that an autumn inspired forest environment (as in PSO: AOTI's case) may have a specific emotional resonance to a Japanese gamer, evoking feeling of contemplation, reflection, calmness, due to the cultural phenomena of '*Momijigari*' that may not be triggered in a non Japanese gamer.









**Title:** *Crysis*

**Platform:** *PC-Win*

**Developer:** *Crytek Frankfurt*, **Publisher:** *Electronic Arts (2007)*

Crysis, a futuristic first person shooter, became quickly notable for its incredibly rich, detailed natural environments. The game took place around the 'Lingshan Islands'; a fictional set of Islands located to the south of the Philippines. What marked Crysis as different was the density and variety of foliage in the jungle environments and the sheer scale and size of the islands. Previous games that had attempted to emulate the thick foliage density of jungle environments had failed, primarily because of technical constraints. Rendering such a large number of plants would often cause inevitable slowdown leading to unplayable frame rates, however the technology behind Crysis allowed for an unprecedented level of flora, whilst still maintaining an acceptable frame-rates.





Crysis was remarkable as the jungle environments were almost congested with a variety of different flora, players could literally lose their bearing in the dense, thick foliage, the scale of the islands were also remarkable, these were not small stretches of limited confined space, but vast complete island spaces that could be explored in several ways. Coupled with this, was the remarkable attention to detail in the landscapes, one could hear waves of the sea lapping gently on the rocky shores, birds chirping in the dense undergrowth, integrated with this, was a variety of rich weather patterns which cycled with in game time(day & night). All these qualities helped to both reinforce the immersiveness of the game's natural environment and mark Crysis as pivotal game in virtual natural design.





















**Title:** *Crysis Warhead*

**Platform:** *PC-Win*

**Developer:** *Crytek Budapest*, **Publisher:** *Electronic Arts (2008)*

Crytek's sequel to the critically acclaimed *Crysis* released in 2007, *Crysis Warhead* delivered astonishingly rich, realistic natural environments. From the detailed intricate rock formations, large variety of weather patterns, rich dense jungle's, the *Crysis* games serve as pivotal examples of how the natural environment in a game quickly become major unique selling points. Previous games had struggled with showing a large variety and density of flora due to technological constraints.





*Crysis Warhead* was anything but sparse; dense thick jungles and forests were complete with decayed fallen tree's, thick undergrowth/bramble, in dense ground fog. Environmental changes, such as palm fronds gently rustling in the wind, or gradual, subtle changes in weather (for instance creeping fog at night), set *Crysis Warhead* and its predecessor apart from many previous attempts. standing on a secluded beach, and just experiencing the day/night cycle in real-time with the subtle changes in weather was an memorable experience that many gamers shared.





























**Title:** *Fallout 3*  
**Platform:** *PC-Win*  
**Developer:** *Bethesda Game Studio's*, **Publisher:** *Bethesda Softworks (2008)*





Fallout 3, a free roaming, post-apocalyptic, open world role playing game similar to *Oblivion*, featured for the most part a barren, lifeless desert environment filled with the fallout of a nuclear war. Despite this widespread destruction and death caused by the radioactive fallout, one particular landscape stands out: The hidden 'Oasis Grove'; which featured a strange mutated human (called Harold) who appeared to not only be a living tree, but also one that managed to create a small, living oasis around him amongst the arid radioactive wastes.





**Title:** *S.T.A.L.K.E.R.: Call of Pripjat*

**Platform:** *PC-Win*

**Developer:** GSC Game World , **Publisher:** *GSC World Publishing (2009)*

An open world ,post apocalyptic first person shooter, *S.T.A.L.K.E.R.: Call of Pripjat*, was the third game in the *S.T.A.L.K.E.R* series centered around the Chernobyl Nuclear Power Plant. *Call of Pripjat* allowed players to explore *Pripjat* (a real world ghost town located near Chernobyl, abandoned after the nuclear meltdown in 1986). The game was divided into three distinct, large playable areas known as Yanov, Zaton, and Pripjat city itself. The player takes on the role of Major Alexander Degtyarev, a member of the Ukrainian secret service, sent by the military to investigate the reasons behind why several scouts on a helicopter recon mission had all mysteriously crashed. The environments were noted for being highly atmospheric, with the designers credited for creating detailed, believable and suspense filled natural spaces by effectively combing both real historical data and artistic license.









**Title:** *Fable 3*

**Platform:** *PC-Win*

**Developer:** *Lionhead Studios*, **Publisher:** *Microsoft Game Studios (2010)*

Set five hundred and fifty years after the original story established in *Fable 1* (2005), *Fable 3* continued (albeit with a new hero), in the fictional world of Albion. *Fable 3* reintroduced lands established in the earlier games and introduced additional environments hinted at through previous geographical maps of Albion. Environments such as 'Aurora', found through the unnamed shores the scorched arid desert continent, home of a once great but now long dead civilisation marked only by the decaying remains of magnificent templates and grand statues, Driftwood, a set of coastal islands south of Albion's capital Bowerstone, and Mistpeak; the cold alpine, snow capped mountain range and valley, part of Albion's eastern region, to the Silverpines; a wild heavily wooded coniferous forest infested with 'Balverines' (ferocious werewolf type creatures)

























**Title:** *The Witcher 2: Assassins of Kings*

**Platform:** *PC-Win*

**Developer:** *CD Projekt RED* , **Publisher:** *Atari, Inc (2011)*

Sequel to *CD Projekt Red's* 2002 surprise hit, *The Witcher 2*, followed Geralt of Rivia's journey through the lands of Temeria. Accused of the murder of King Foltest, ruler of Temeria, *TW2*, followed Geralt's through the lands of Temeria, from the lush green wilderness of Flotsam Forests the dangerous gullies of the Forest Ravines, the vast plains of Pontar Valley, to the abandoned haunted mines of Vergen.









CD Project RED's sequel to its 2007 hit, *The Witcher*, demonstrates several extremely well designed elements of the natural environment. What made TW2 great were the changes in the standard weather cycle not being limited to large scale weather shifts but included the momentary subtle shifts: i.e. watching the sunlight pouring through the overheard branches/clouds suddenly shift from intense sunlight to a dark overcast shadows mimicking the subtle real winter/spring weather patterns, was wonderful.

The environmental flora was detailed, rich and varied: small, medium/large flora was integrated around the natural environment in a much more believable manner, rock crevices were complete with plants, hanging moss from entrances to caves, the forest floor illuminated by the sunlight, scattered by the forest canopy was littered with a variety of leaves in different stages of decay. The tree's in Flotsam Forest have thick gnarly, gangly roots are almost stereotypical as they rise from the ground to form the large ancient trunks overhanging the cliffs and wonderfully twisted and organic terrain.









The terrain found in the *The Witcher 2* environments i.e gullies, brooks and riverbanks were wonderfully crafted to form detailed almost textbook representations of natural geology: there is a great deal of attention to the game's terrain, demonstrating actual erosion, decay and related organic processes. The environment also lacks identifiable visual repetition, it is hard if not impossible to identify two identical tree's or rocks. The bane of any virtual environment, with artist created assets is that overuse can often lead to identifiable visual repetition, which can break the believability , and possibly immersion of a natural, organic setting.

The minor geological formations are also impressively visualised, harsh transitions (i.e. from the lake beach to the forest) between landscape types have almost been removed through careful design i.e. the riverbanks in the game aren't uniform, it's long form is broken by irregular mounds of loose stone than blend the form with the surrounding. The game was unlike many earlier virtual natural environments, in which different elements of the landscape (terrain, tree cover, water bodies) would appear to be poorly integrated with one another, breaking the illusion of a natural growing space.

















**Title:** *Skyrim*

**Platform:** *PC-Win*

**Developer:** *Bethesda Game Studio* , **Publisher:** *Bethesda Softworks (2011)*

Skyrim is Bethesda's fifth instalment in The Elder Scrolls series of open world role playing games. Set two hundred years after the events of the previous game *The Elder Scrolls : Oblivion*, Skyrim takes place in Tamriel the continent established in the previous games and represents the northernmost province. The virtual geography of the province of Skyrim contained many different landscape types ranging from lush alpine forests, highlands, tundra plains, swamps and mountainous regions. Skyrim's landscapes mainly consisted snow covered mountains, deep valleys and vertical cliffs, unlike the other lands established in the previous games.









Skyrim built upon the impressive open world natural environment of *Oblivion* in several key areas. One of the largest advances made was around the representation of water. The game utilized a much richer variety of water bodies, such as streams, waterfalls, lakes. These unlike the previous game can be found through the land and for the first time underground (the game boasted several impressive underground caverns filled with majestic towering waterfalls)

Skyrim's landscape also incorporated a much more believable terrain; gone were the uniform generic undulating hills that made up most of the environment, Skyrim's terrain utilized an array of cliffs and overhangs complete with exposed fallen tree roots, and outcroppings scattered around to create a richer more immersive environment compared to *Oblivion*'s. Flora was also developed further with the aid of a new custom built engine; giant rotting fallen tree's in various stages of decay complete with pickable fungus, littering the lands to tree branches to which weight could be assigned in order to determine resistance/movement to the virtual wind, helped push Skyrim's natural environment further than the previous Elder Scroll games.









**Title:** *Dear Esther*  
**Platform:** *PC-Win*  
**Developer:** *thechineseroom*, **Publisher:** *Steam (2012)*

Originally a 'mod' (a modification of another established game) created in 2008 *Dear Esther* was so well received by gamers and critics it was developed into a standalone game. An experimental first person game, the game lacked many of the conventional elements of a game, and instead the designers chose to solely base the game around two aspects; a narrative and the rich natural environment.









*Dear Esther* was based around a uninhabited Hebridean island, with players navigating through a relatively fixed path (triggering the narrative at certain key points) around, and under the Island. What marked *Dear Esther's* environment as unique was the level of detail in the environment ranging from the aesthetics, which have a definitive Scottish feel (ranging from the type of range of flora, the terrain, the weather/climate etc..) to how the environment was designed and constructed to gel completely with the narrative; players and critics commented that the Island had a tangible feel of loneliness and isolation.

*Dear Esther* also highlights that not only can good environmental design become a core unique selling point, but also that steering the player (although the game some argue restricts the player's exploration significantly by disabling jumping/running) by utilizing the environment can help align the designer's intended experience with the player actual experience based on his/her actions.















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The magical essence of natural landscapes since the dawn of man have been a source of intrigue, wonder and inspiration in art, philosophy and literature. With each new era in civilisation, new methods of creative expression have been used by artists, designers and writers to capture the rich natural landscapes, and with the 21st century and the emergence of new interactive technologies, this innate desire is being expressed through the digital domain.

From the giant mushroom forests of *Morrowind*, the Archipelago islands of *Zelda: Wind Waker*, to the tropical underground caves of *Phantasy Star Online*, Virtual landscapes have enthralled, captured and engaged player imaginations for over 30 years. *Virtual Landscapes* is a three part series attempting to, for the first time, visually illustrate, share and critically reflect upon the unique, virtual natural landscapes within Computer & Video Games.



*Virtual Landscapes: The Modern Era* visually illustrates the revolution in complexity and richness of virtual natural landscapes that occurred in computer & video games from 2000 to modern day. From the tranquil landscapes of *Morrowind*, the rolling forested autumn hills of *Oblivion*, the eerie landscapes of *The Witcher*, through to the beautiful deep crimson Maple forests of *Phantasy Star Universe*, the vast epic landscapes of *Skyrim*, and finally to the lonely landscapes of *Dear Esther*, *Virtual Landscapes* presents these virtual spaces for the first time, in stunning unseen digitally enhanced, high resolution and panoramic forms.

