Virtual Landscapes

The Transition Era (1990-1999)

by Umran Ali

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About The Author

Umran 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) Umran 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. Umran 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 Umran acted as Programme Leader for the BSc (Hons) Computer & Video Games 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 Umran's students since, have gone on to work in the creative industries including the videogame industry

Umran'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 for 'virtual lecturing', to working on projects in partnership with UK based organisations such as the DarkHorse organisation, BT and the Foundation for Art & Creative Technology (FACT).

Umran 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 particular.

In his spare time, Umran 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 this 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, immersivness, 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 is 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 recognize the potential of ideograms 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, Alia for her patience and understanding, my daughter. Marian (who one day I hope will understand why daddy was always busy working.....) and my young son Zany, and to all who have motivated and inspired me to work on this.

Human 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 civilization, new methods of creative expression have been used by artists, designers and writers to capture the rich natural landscapes, and with the established 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 an 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 in 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 they final result cannot be used purely as 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 a 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 Transition Era (1990-1999)

Technological advancements such as digital scanners and increased memory capacity allowed game environments to make the leap from the simple two dimensional , block-pixel based forms to environments that utilized detailed digitally converted landscape paintings. Games such as *Kings Quest 5 ,*and *The Legend of Kyrandia* demonstrated the transformation of the visual quality of these virtual environments from crude simulations to rich detailed spaces.

The design process began to evolve further, with designers realising that natural environment design was greater than simply the geometrical representation of an environment but one that included other aspects such as weather, climate etc. Simulations around environmental changes further evolved, and started to become increasingly integrated with the visual elements in natural environments. In addition to technological developments in lighting (such as day and night cycles), crude weather cycles start to be incorporated into these virtual environments (*Daggerfall),*

Developments of new graphic technologies such as Mode 7, allowed the creation multilayered 2D environments, with platforms such as Sega's Megadrive and Nintendo's Super NES, heralded a evolution of the 'Ant-farm' perspective as 2D layering allowed the simulation of three dimensional depth in environments by using 2D images. Later with the development of rudimentary 3D capable platforms such as the Nintendo's N64, the 'Ant farm' perspective is reinterpreted into three dimensions. Natural environments on platforms such as Nintendo's N64 exemplified this, as extruded block form geometry was used to simulate hills and mountains on a basic 3D terrain. This approach was used as a system by designers to restrict access to the specific parts of the environment in order to align progression with the gameplay and/or narrative. However, despite the emergence of 3D technologies, natural environments still limited players' movement to a flat horizontal plane, however early indicators pointed to height (i.e. z axis movement) was to be a key differentiator in the next era

The development of pseudo(i.e. isometric, pre-rendered 3D) and rudimentary 3D technologies led to a an inevitable decline in natural environmental design as designers struggled to fully utilise the new toolsets based around spatial design, and artists move away from traditional art disciplines (i.e. landscape painting) .

Throughout the 'transition' era water simulation was also problematic, the result of which meant that natural environments for the most part lacked water: rivers, waterfalls, lakes were essentially non-existent due to technological constraints of simulating water. Water bodies that were simulated were restricted to block 'volumes'; carefully placed discrete sections of water that were often harshly separated from the terrain.

The 'Transition Era' can largely be defined both as a period that marked the peak and rapid decline of the previous design methodologies in the embryonic era, and by the introduction and rapid evolution of 3D engine technologies which would radically shape virtual landscapes in the years to come.

Transition Era
1990-1999

Title: *King's Quest V: Absence Makes the Heart Go Yonder!*
Platform: *PC-DOS*
Developer: *Sierra* ***Publisher:*** *Sierra (1990)*

Kings Quest 5 illustrated the emergence and shift in game environments to intricate natural landscape matte painting rather than the pure digital pixel environments of the embryonic era. From the precarious grassy cliff verge, to the musty entangled forests, the landscapes in Kings Quest 5 illustrated both a leap in the graphics technologies used in creating these virtual spaces, and in the design and composition of these spaces in order to serve the gameplay and narrative structures. The unusual rock formations were wonderfully archetypal; fragile yet dangerous and inviting, the precarious grassy cliff verge, with the natural archway prompted the player to explore further, and highlighted the attention to detail that was placed in each an every environment scene in the game.

Navigating the pseudo 3D space, was carried out within the confines of a 2D grid (the background was played as 3D space, but the player could only move on a 2D 'X/Y' plane in reality) and was a potential design issue. However in this instance once can see guiding the player's progression through specific gateways is much easier by utilizing the physical environment , i.e. Stone Archways . as natural waypoints.

The use of natural doorways arguably lends itself incredibly well in reinforcing the game narrative's and adding to the sense of discovery and exploration to the onscreen space. Perhaps due to limited terrain geometry technologies, certain landscape types (one could refer to these as 'Archetypal forms') found in this game appear not to have made the jump into modern day 3D equivalents, perhaps as result of technology driving the design process, rather the vice versa.

The wonderfully tangled and twisted roots structure in the forest landscapes highlight a believable organic flow, in the landscape, where nature isn't constrained , the roots of a small tree appear to penetrate and split the boulders scattered around the landscape. Moss, lichen, weeds intermingle with the decaying stumps of dead tree's, the different components of the landscape are still discernable. Later the move into early 3D environments, would illustrate this to be an inherent weakness of 3D environments, i.e blending different landscape elements into a coherent, believable space.


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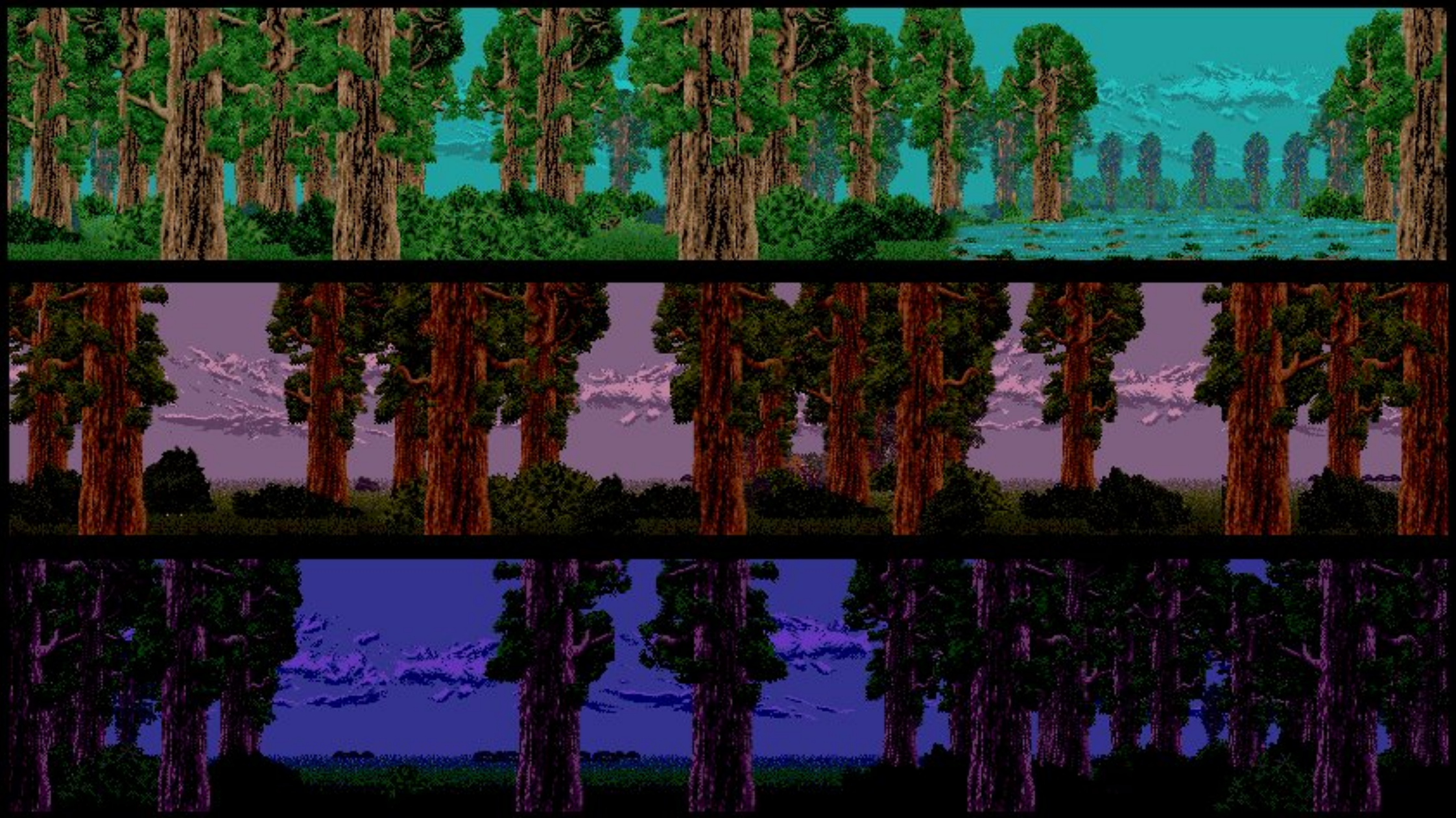
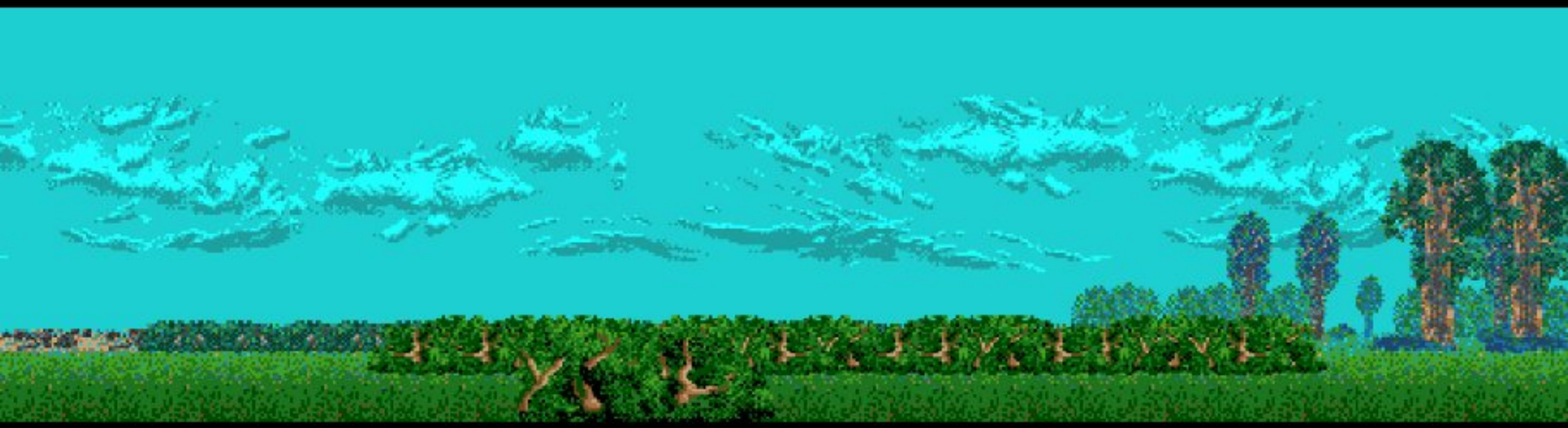
Modern 3D games environments are afforded the luxury of essentially limitless virtual space in comparison to the early games such as Kings Quest which utilized used each screen as a carefully designed natural environment space. (i.e. as a series of distinct landscapes. Each view was both an aesthetically rich (picturesque) and designed (player navigation) space.

Each landscape scene had a definite path one could imagine following, whether it was the geology, or flora, created through a close alignment between the environment design and gameplay, the environment steered the player through. Translating this effectively to a full 3D environment isn't without significant challenges, as the design considerations increase exponentially with modern 3D environments. A case could be made however that perhaps some of those archetypal reductionisms could be used by a designer to steer the player towards intended key points in the environment, linked to gameplay or narrative.



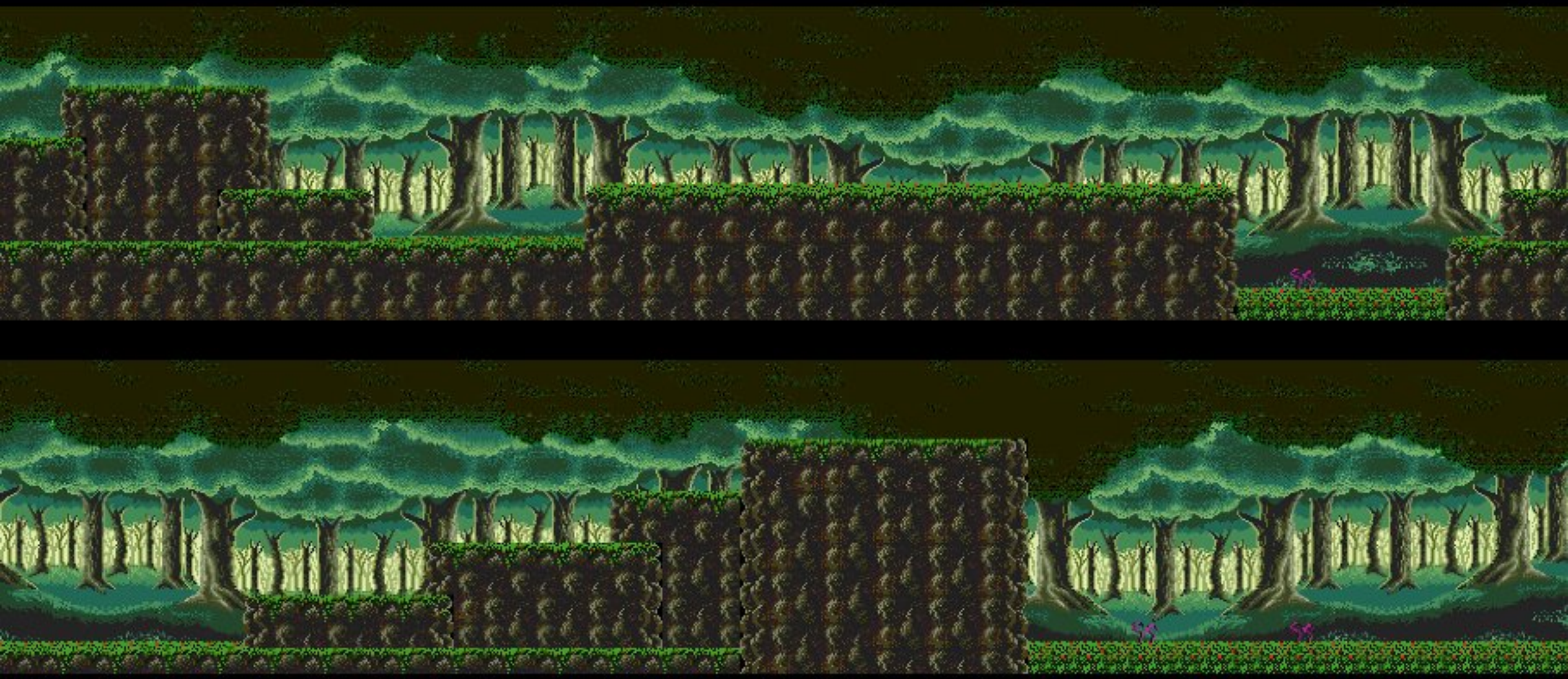
Title: *Crystals of Arborea*
Platform: *PC-DOS*
Developer: *Silmarils* **Publisher:** *Silmarils (1990)*



Title: *Mickey Mouse: Castle Of Illusion*
Platform: *Sega Megadrive*
Developer: *Sega AM7*, **Publisher:** *Sega (1990)*

A side scrolling fantasy platformer *Mickey Mouse: Castle Of Illusion,* was the first in Sega's 'Illusion' series of games, following Mickey mouse on a quest to rescue Minnie from the clutches of Mizrabel the witch. The game was one of the first titles on Sega's Megadrive system, and helped showcase the technological improvements of the system over Sega's previous console, the Master System,

The forest stage in *Mickey Mouse: Castle of Illusion* illustrates the development of 2D side scrolling environments with the multi-layered landscape moving at different speeds with the sprite layers giving the illusion of depth in the 2D side scrolling game. This allowed the creation of several unique natural landscapes, ranging from the Enchanted Forest, complete with the tranquil woods, to the high tree canopy, where the player would navigate the level by jumping across floating leaves, against a backdrop of spider webs glistening with morning dew. The game also boasted crude weather effects; on entering the second stage within the forest level, the bright skies would quickly darken with ominous clouds (this was achieved with a simple colour transition from green to dark blue) adding to the rich atmosphere , and setting the player up to expect something sinister was to come shortly.

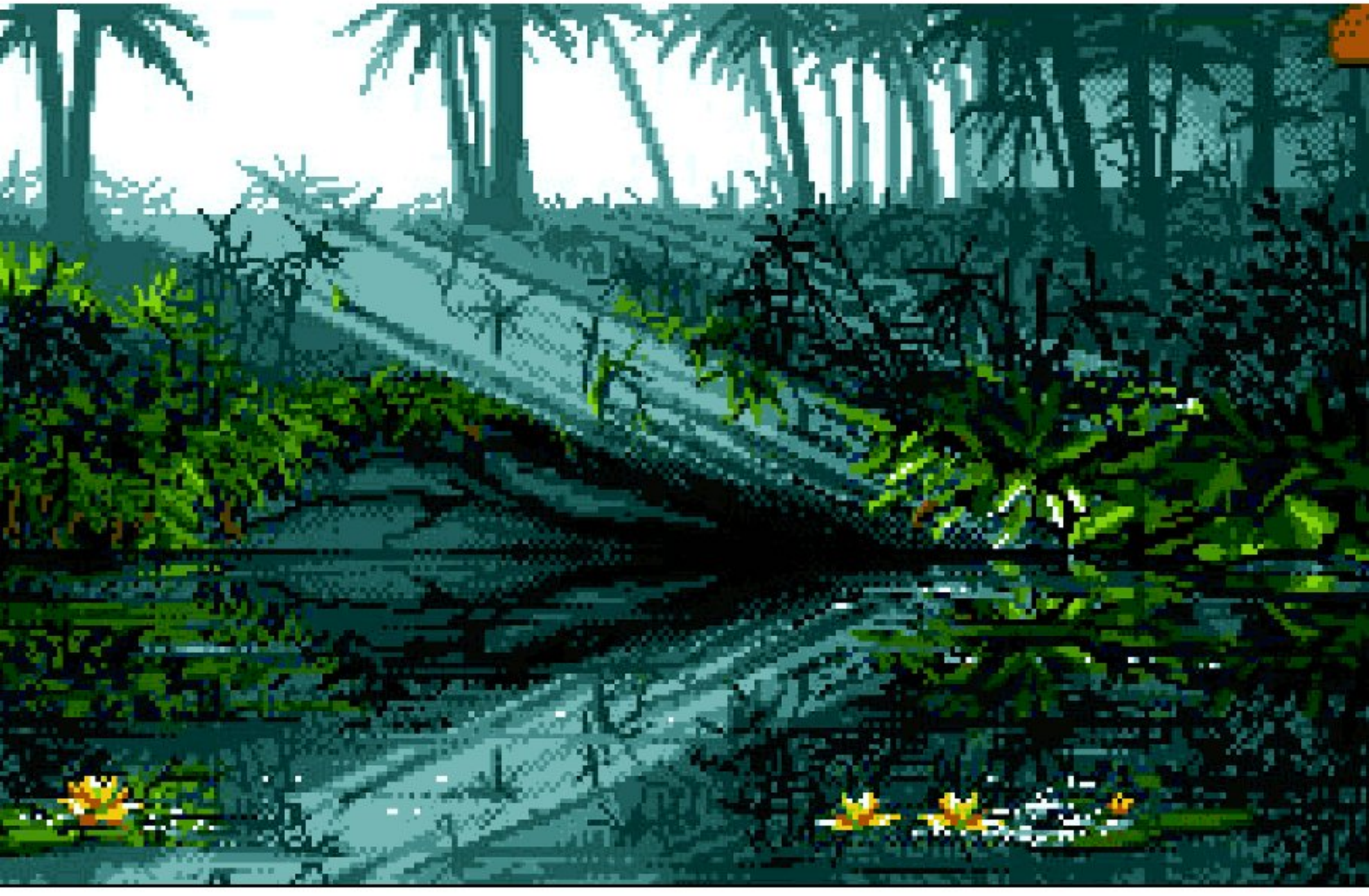


Sega's previous console, the Master System was only capable of displaying a basic 2D background and foreground. The enhanced technical capabilities of the new console coupled with advancements in design allowed the development of a the rich cartoon forest in the 2D 'Ant farm' view. This extended beyond the single cross sectional plan seen previously to one where the cross sectional view incorporated a midground, foreground and background. Once again the abstracted representation of the natural environment is obvious, despite the rich 'realistic' background forest, the player played on a very angular, block form based foreground. Movement was also dictated by a strange logic, the player could traverse the block mounds by jumping on the grassy top 'lid', it was also possible to jump through the block mounds by jumping from underneath the grassy top, however certain mounds walls would block the players movement, others would not, leading to a situation where players would have to 'bump' into these walls to know if it was a solid wall or not, and then to take the appropriate action. This strange abstraction, still continues today in 2D side scrolling platform games.

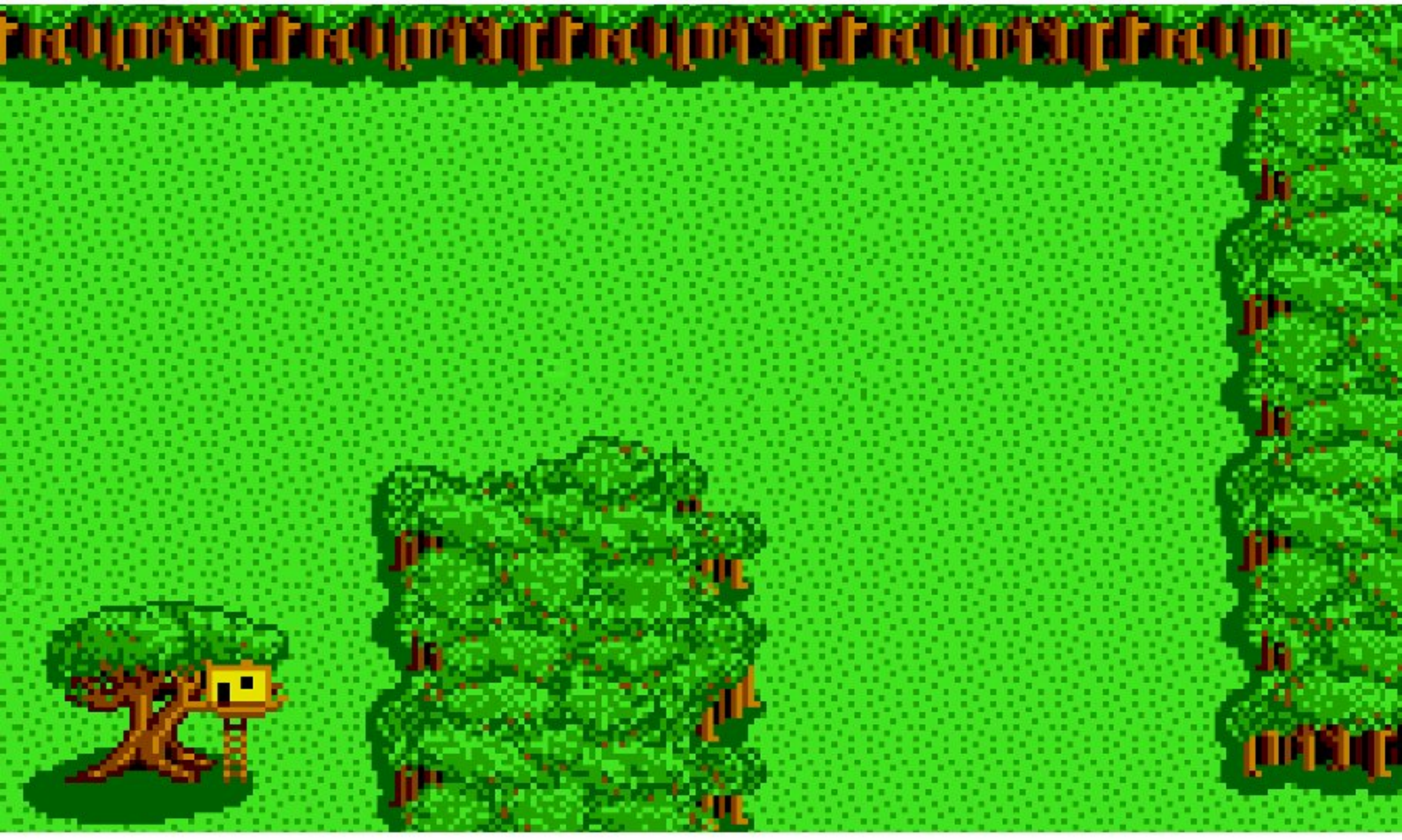
Title: *Maupiti Island*
Platform: *PC-DOS*
Developer: *Lankhor* , **Publisher:** *Lankhor (1990)*

In this particular scene, the tree cover formation intersecting the beachfront becomes a distraction, and a focal point. Often within virtual environments tree cover can blend with the background environment, creating a much more difficult arena for effective spatial design, as such tree cover can potentially represent a vital element in natural landscape composition, and therefore one that environment designers should take into account when designing natural spaces.

One can imagine if the environment were to be translated into a 3D space, the player would either be drawn overhanging palm tree or would have their movement broken on traversing the beach, this could prove useful to a potential designer as the tree would serve to be a natural waypoint. for any player within



Title: *Kings Bounty*
Platform: *Sega Megadrive*
Developer: *New World Computing*, **Publisher:** *Electronic Arts (1990)*



Kings Bounty took place over a series of distinct 'continents'. The key to moving to a new continent lay in finding new maps to allow distant travel, desperately searching treasure chests hoping one would reveal a map to the next continent, this was a greatly anticipated moment of joy, as a new map would allow further exploration of new hostile lands, to the wonderfully apt named places such as Forestria, Archipelagia, or Saharia accessing different continents not allowed for progression but in turn access to better troops and equipment.

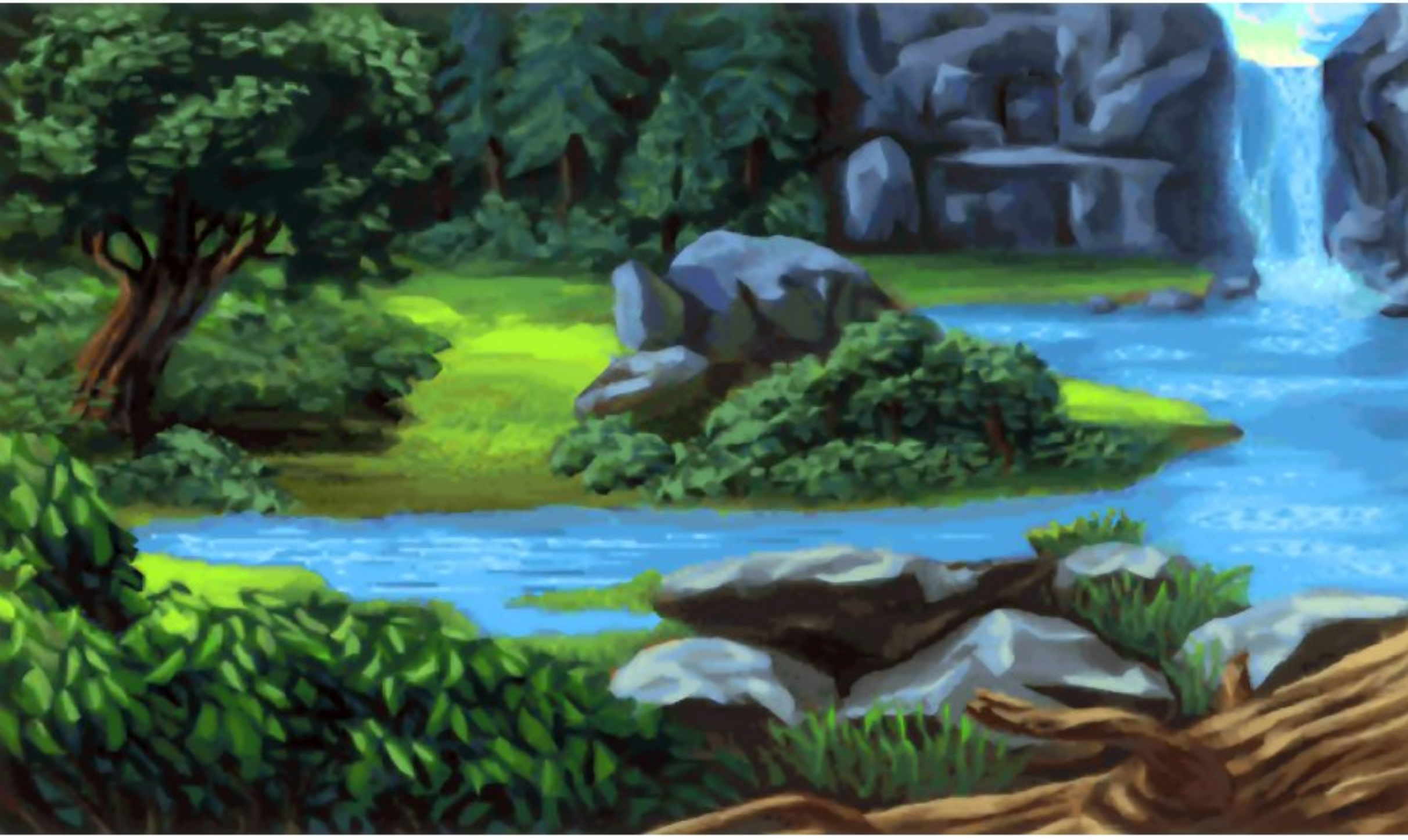
Title: *Conquests of the Longbow: The Legend of Robin Hood*
Platform: *PC-DOS*
Developer: *Sierra On-Line,* **Publisher:** *Sierra On-Line (1991)*

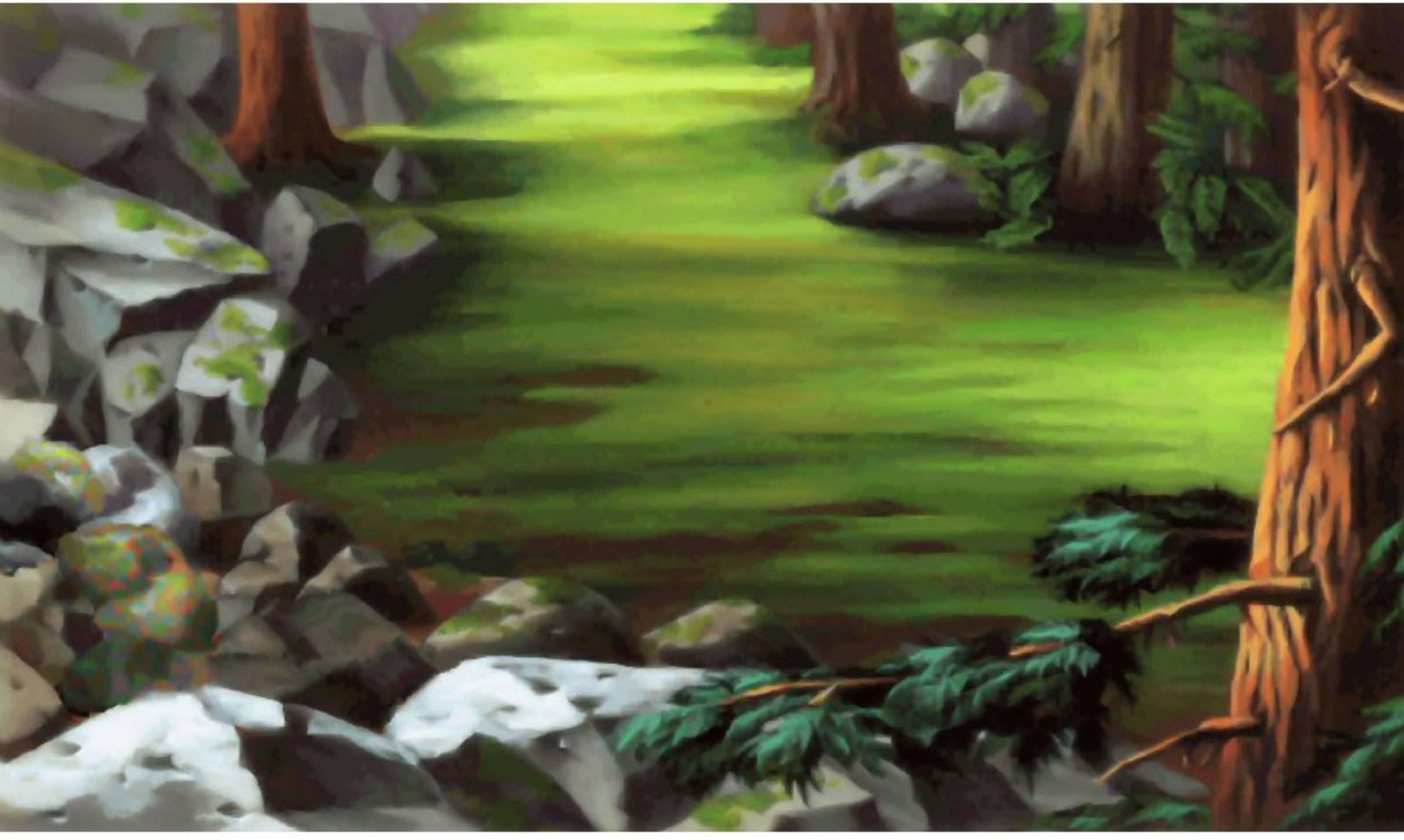
Title: *Super Ghouls'n Ghosts*
Platform: *Super Nintendo*
Developer: *Capcom,* ***Publisher:*** *Capcom (1991)*

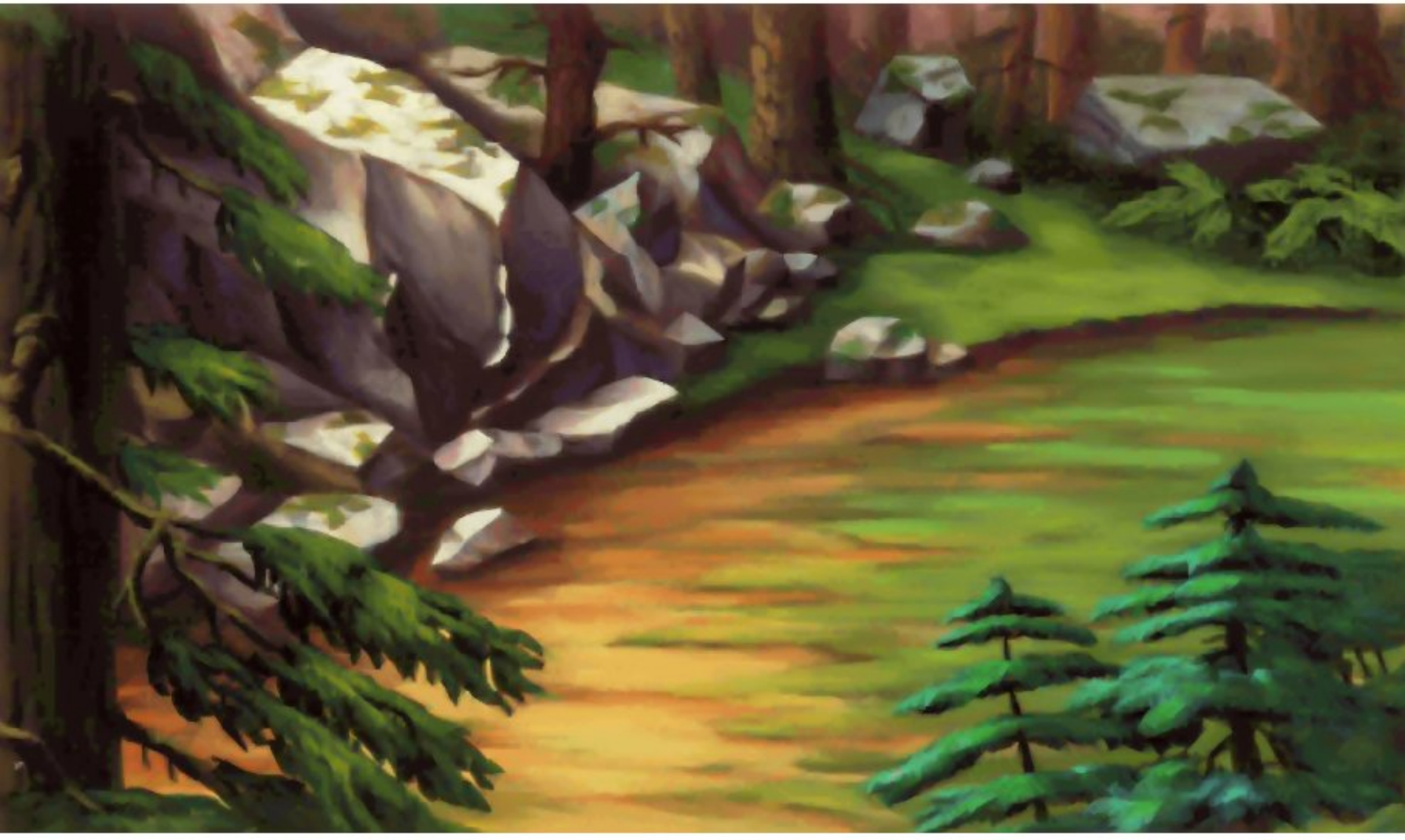
Super Ghouls'n Ghosts, an update to Capcom's 1998 Arcade classic, in which players took on the role of the Knight Arthur on a quest to rescue a princess from the Emperor Sardius. The game was a port from the earlier 1998 Arcade version bar a few extra additions including dynamic terrain. In certian areas, the cross sectional terrain would collapse and rise when the player approached, opening up new paths or introducing new obstacles for the player to overcome.

Title: *Quest for Glory: So You Want to Be a Hero*
Platform: *PC-DOS*
Developer: *Sierra*, **Publisher:** *Sierra* (1992)

Quest for Glory was one of the first role playing games that added an element of realism to the world. The concept of time passing in game, had already been implemented in previous games, however in within Quest for Glory, time passing altered how the player would interact with non-playable characters and impacted the environment , i.e. at night, shops were shut, and became more dangerous to travel.



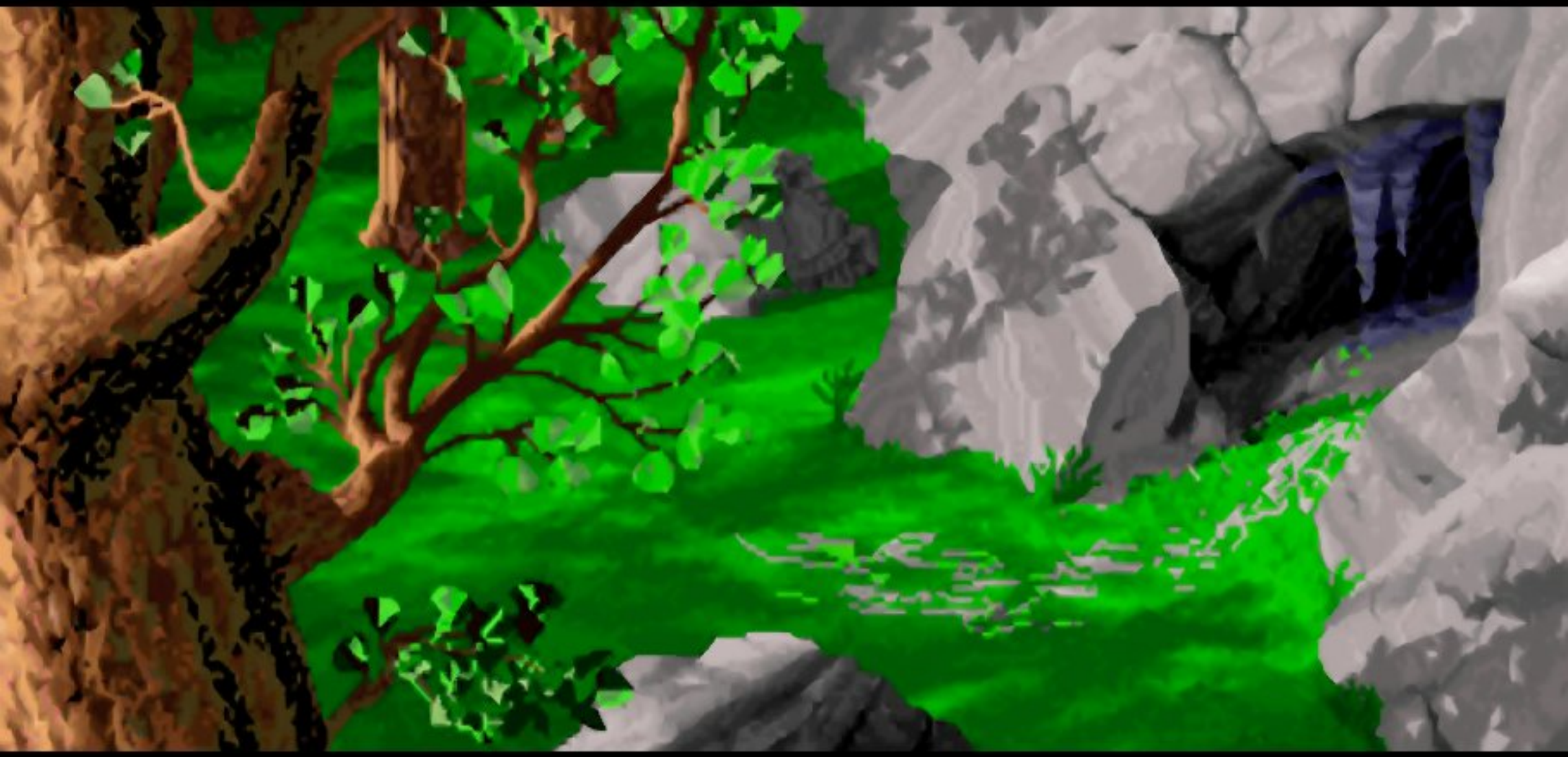


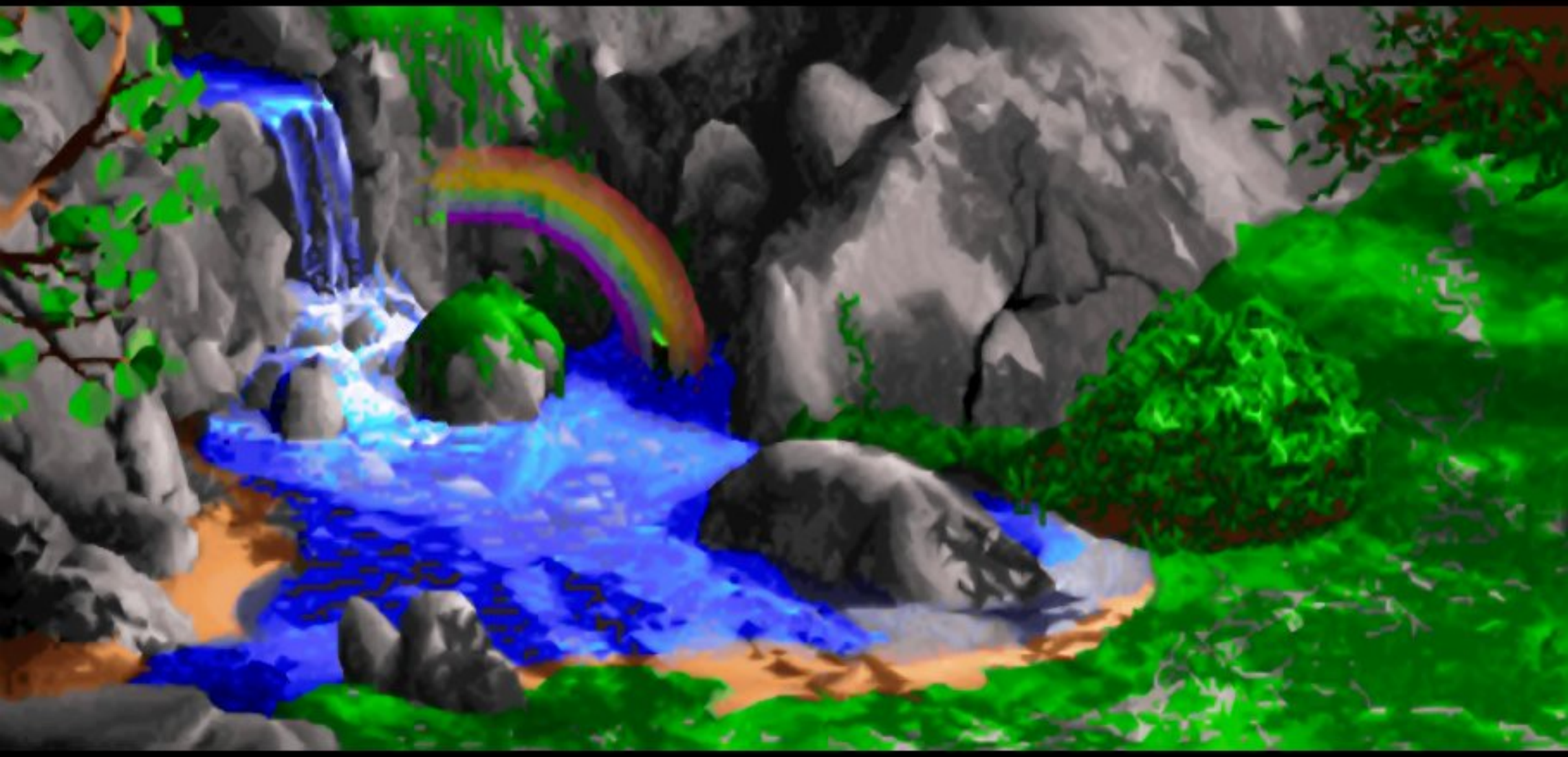


Title: *King's Quest VI: Heir Today, Gone Tomorrow*
Platform: *PC-DOS*
Developer: *Sierra Entertainment,* **Publisher:** *Sierra Entertainment (1992)*

Title: *The Legend of Kyrandia Book One*
Platform: *PC-DOS*
Developer: *Westwood Studios,* ***Publisher:*** *Westwood Studios (1992)*

A relatively unknown game, *The Legend of Kyrandia, a* fantasy point and click adventure was known for it's simple, intuitive interface, as well as introducing with world of Kyrandia. The game also presented the world as a self contained island in which distinct landscapes (each forming a unique game-space) could be found.





Title: *The Legend of Kyrandia Book Two: The Hand of Fate*
Platform: *PC-DOS*
Developer: *Westwood Studios.* **Publisher:** *Westwood Studios (1993)*

The opening scene *The Legend Of Kyrandia 2,* shows a landmass being magically torn from the main continent. It's within this the game takes place, around a series of smaller landscapes within the larger natural environment. It is in this approach, one can see the potential of a systematic approach in creating larger natural environments through a process of designing smaller, themed landscapes. Each sub-area within the game was aptly named after the defining natural environment feature, from the putrid murky Darkmoor Swamps, the rolling fields of Morningmist Valley, to the Petrified Forest complete with quicksand and fossilised tree's, the designers behind TLOK2 attempted to create a place filled with iconic, rich landscapes all interconnected in a believable island space.

The landscapes in Kyrandia are the result of a long process of design, however how that design evolved and developed, as is the case for most games, especially in the embryonic and transition era, has largely been lost as little emphasis was placed on both tracking the incremental development and preserving the documented design. Design's that were documented have also fallen under strict NDA agreements and as such remain behind closed doors. When one analyses the constituent elements of natural environment design in games, it could be further evolved by combing with disciplines such as geology, landscape aesthetics, environmental psychology to develop richer, structured frameworks.

A potential tool that could be used for this design process is found in traditional natural environment design disciplines such as landscape architecture and surveying. Landscape Character Assessment's(LCA's) according to The Countryside Agency LCA guidance, is a tool "...*used to help ..understand, and articulate, the character of the landscape. It helps... identify the features that give a locality its 'sense of place' and pinpoints what makes it different from neighbouring areas."* Although LCA's are used on exiting physical landscapes, the process of defining the larger macro regional character areas (or even the larger bio-climatic zones) down to specific micro 'site features' , one could imagine, prove to be very useful to a natural environment designer, if it were used as part of a systematic process to create more immersive, believable natural environments.

One particular scene in Kyrandia 2 had all the ingredients of an iconic landscape; unique geology and rock formations, a precarious path, under a dramatic sky, all inferring a mystery begging to be explored. The precarious winding cliff, appears to be the only route to a strange building perched upon an eroded sea stack, and is so inviting as a mystery to explore it would be hard to ignore. The only way across the chasm appears to be two tree's outstretched almost in an embrace. Precarious, enigmatic, mysterious are all feelings that are evoked with the wonderfully crafted landscapes in TLOK:B2.

The dangling rope hung from a tree teetering on the edge of cliff, is reminiscent of the scene in the film *Castaway* (2000) in which the marooned hero had to return to the peak of the island he was stranded upon to retrieve a rope he desperately needed. In the scene Hank's character Chuck reaches out barely able to grasp the rope he needed half perched and dangerously standing on a cliff edge. There was a somber tranquility in the scene, the lethality of the precarious cliffs was balanced with a tranquility of being high above the rocky shore. One can imagine that translating this to an interactive immersive 3D space would be interesting challenge for a designer. This coupled with a dynamic landscape (in particularly the terrain) could lead to much more immersive and engaging experiences. One could imagine that is the precarious rocky cliff were to collapse under additional weight (as often happens to weakened natural structures in reality) such as the player's weight, this could lead to interesting gameplay outcomes such as introducing additional risk to player decision making. In addition it could add a transitory element of to the cliff structure; as a non static, dynamic environment that may be lost forever in game, never to be experienced or seen again, a space the player may cherish, whilst it still exists.

What appears to be a wonderful flight of fantasy: a living tree twisted into a bridge spanning a river surprisingly has a basis in real life. The tree bridges in Meghalaya, are actual living bridges carefully manipulated from seed to grow in a very controlled manner, only being allowed to fully take root once they have grown across the river. These spectacular bridges can reach over 100 feet long, with some of the oldest bridges being over 500 years old. Perhaps the artist was inspired by an old myth or legend of living root bridges or maybe this particular landscape is just a creative co-incidence, regardless, the idea of a living structure is fascinating and intriguing, perhaps something that natural environment designers could explore further , possibly advancing the concept further into more complex or alternative organic architectural structures.

Quicksand is a fascinating natural phenomena, scientifically known as a 'colloidal hydrogel' *(a microscopic substance suspended in another substance).* In popular culture individuals falling, and quickly becoming submerged before being devoured never to be seen again is a common, overused, depiction of quicksand. Quicksand in reality does cause a rapid slowdown in movement if stepped into, within a virtual environment, quicksand can be a powerful concept when connected with movement. An interesting design consideration now arises, how could future natural environment designers use the real life properties of quicksand (*i.e. rapid slowdown of movement)* and the fictional expectation *(rapid sinking)* either as a game mechanic or to enhance the believability of a natural environment?

One could imagine an implementation with a game that combined both to be particularly interesting. For example a character traversing a virtual natural environment to be caught suddenly unaware with their movement had strangely, rapidly slowed down, realising they had stepped into a area of quicksand, sinking quickly, deeper and deeper into an unknown abyss, when suddenly the panic and horror is replaced by confusion and intrigue, on realising the quicksand was an entrance to a hidden underground cavern system, ready to be searched and explored.

Title: *Betrayal at Krondor*
Platform: *PC-DOS*
Developer: *Dynamix*, **Publisher:** *Sierra On-Line (1993)*

An early 3D, first person role playing game *Betrayal at Krondor* utilized 3D technology to create a rudimentary open world. Using a combination of textured 3D graphics and sprites, the environments were primitive i.e the terrain by modern standards was incredibly crude, essentially limited to a single flat plane, although crude 'extrusions' simulated mountain/hills, the player was essentially restricted to traversing across a single plane.

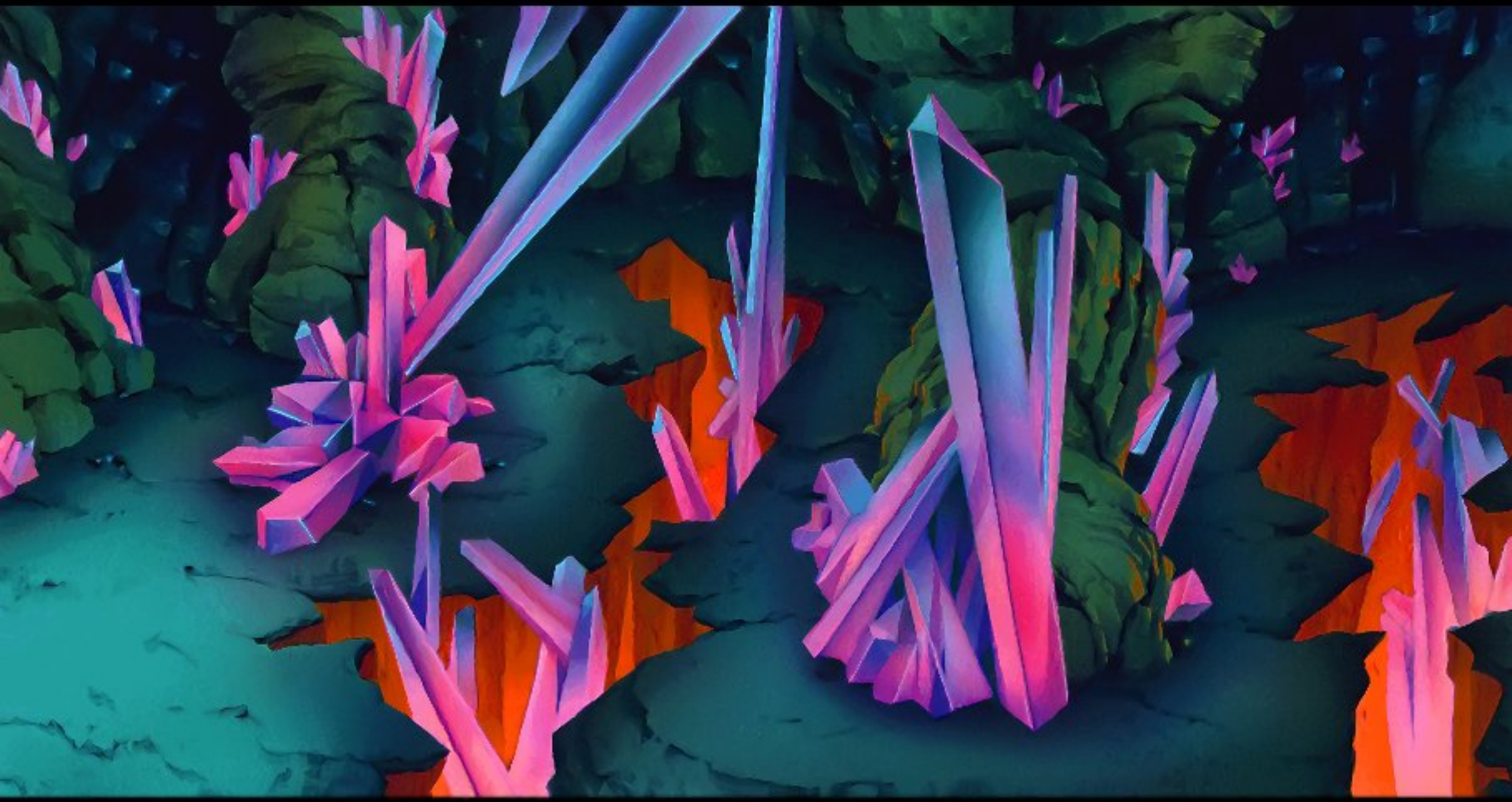
Betrayal At Krondor exemplifies two of the major issues in the transition from 2D to 3D natural environments, the lack of water bodies, and the lack of height in the terrain .The environments during this era largely lacked most forms of water: rivers, waterfalls, lakes were essentially non-existent due to technological constraints of simulating water. Large water bodies such as oceans were however crudely simulated. Players were also restricted with interacting with the water due to technical and design constraints still limiting what was possible within a virtual environment.

Title: *Landstalker*
Platform: *Sega Megadrive*
Developer: *Climax Entertainment*, **Publisher:** *Sega (1993)*

Landstalker represented one of the first foray's on consoles using the *isometric perspective* (a method for visually representing 3D objects in a two dimensional space). Traditionally natural environments had been visually represented from either a side on, cross sectional perspective (ant farm) or a top down, bird's eye view, Landstalker was a brave attempt to move beyond traditional technological limitations , and move away from the 'ant-farm' landscape abstraction by visualising the world in a fixed, pseudo 3D fashion, this had the benefit of not being too resource intensive (no 3D processing was needed since this was a pseudo 3D) and illustrating the Island of Mercator in a rich and unique fashion.

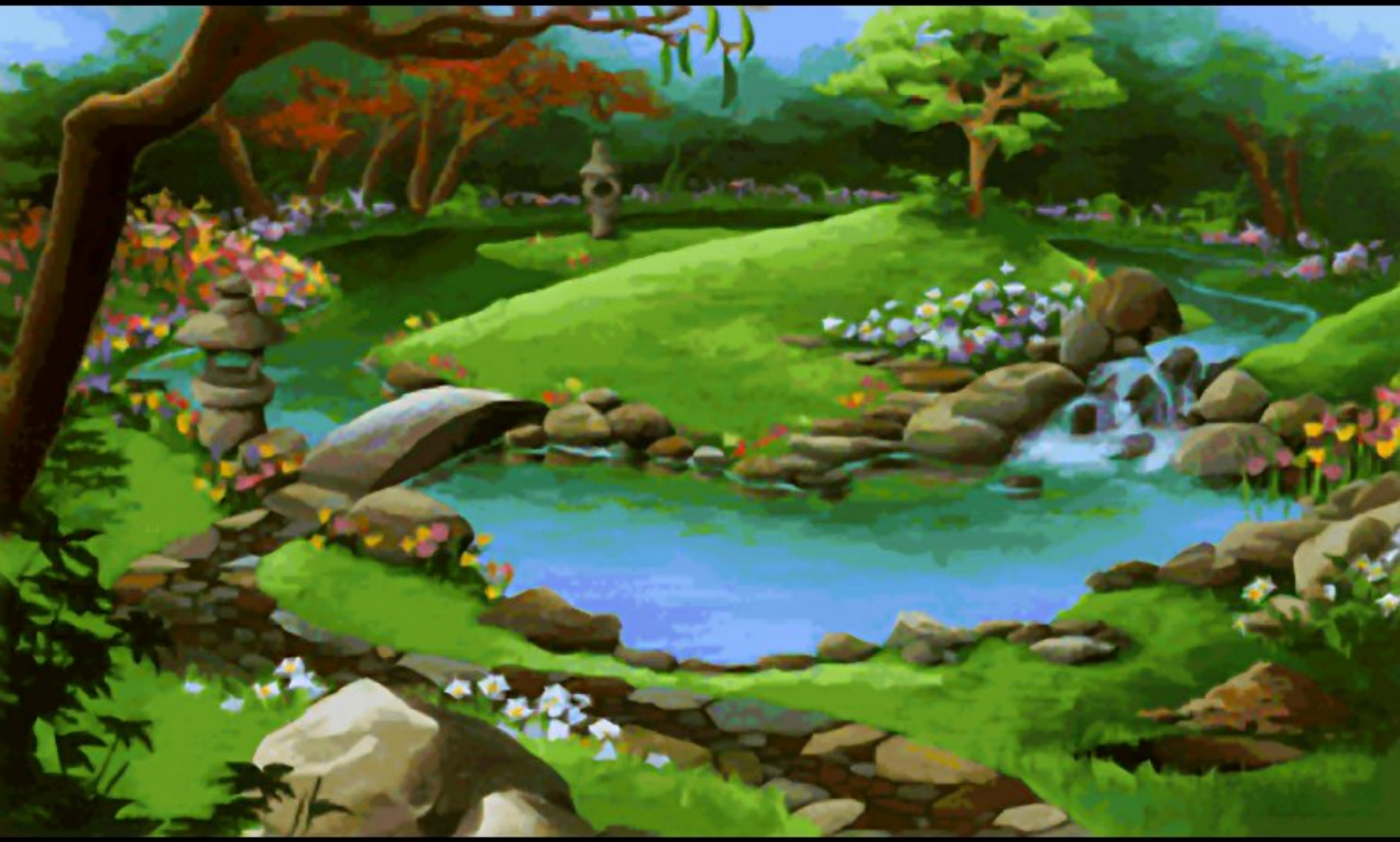
However the game was not without issues, one of the limitations of using the isometric perspective was that discerning the height different between two points was often extremely difficult, in the case of *Landstalker,* this resulted in players often miscalculating a jump to vital platform, only to fall into a deadly trap below.

Title: *King's Quest VII: The Princeless Bride*
Platform: *PC*
Developer: *Sierra,* **Publisher:** *Sierra (1994)*



Title: *Flink*
Platform: *Sega Megadrive*
Developer: *Psygnosis,* **Publisher:** *Psygnosis (1994)*

Title: *Quest for Glory: Shadows of Darkness*
Platform: PC-DOS
Developer: *Sierra*, **Publisher:** *Sierra (1994)*



Title: *The Elder Scrolls : Arena*
Platform: *PC-DOS*
Developer: *Bethesda Softworks,* **Publisher:** *Bethesda Softworks (1994)*

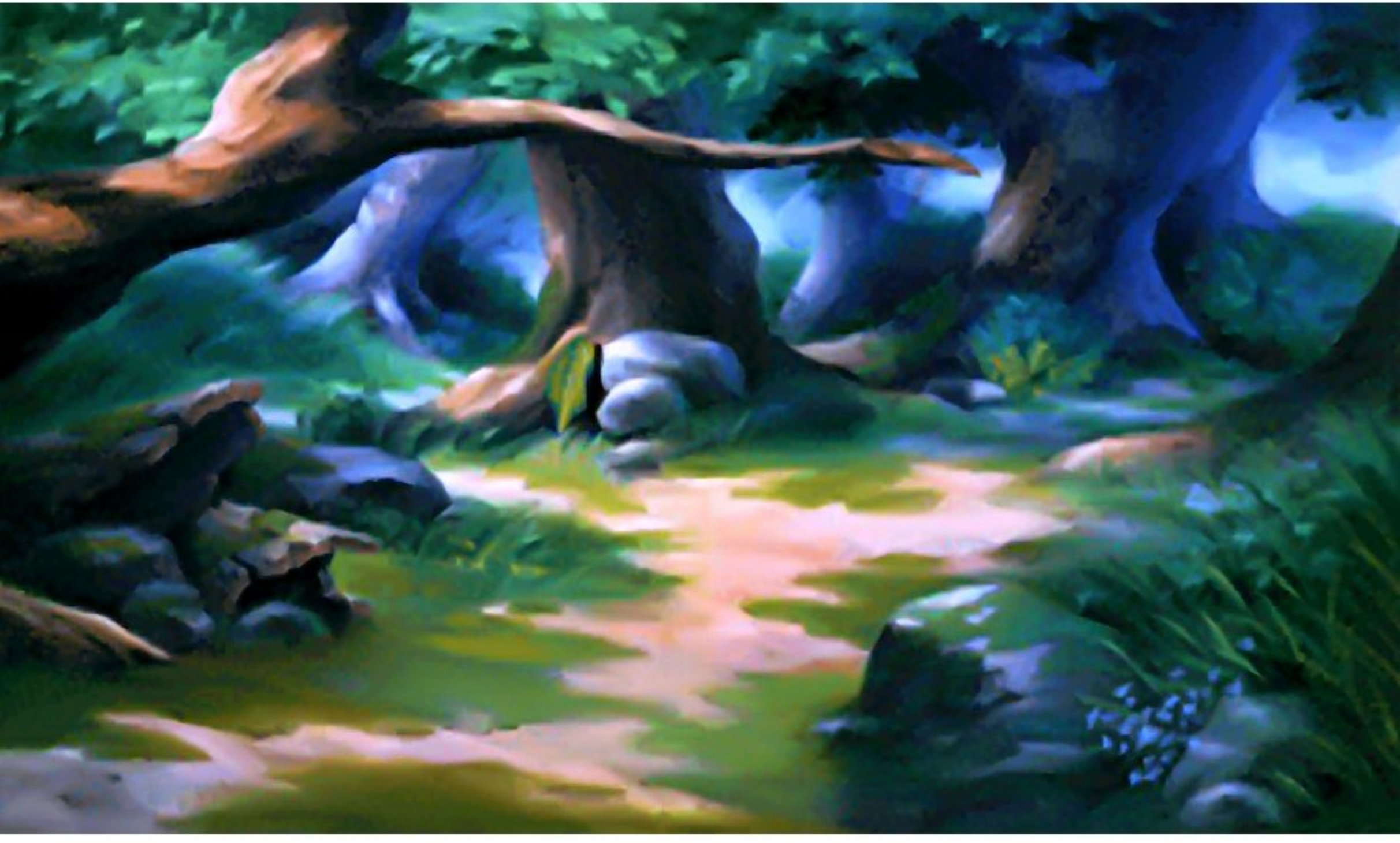
Arena, the first game in Bethesda Softworks, in the now established *The Elder Scrolls* series boasted a randomly generated terrain, huge outside world to explore. The game introduced the mythical continent of Tamriel, and a came with an extensive world mythology which laid the foundations of other provinces and areas (these were later expanded upon and formed the basis of sequels such as Morrowind, DaggerFall , Oblivion & Skyrim). One noticeable quality of *Arena* is the perfectly flat terrain, which would prove to a particular aspect that would undergo rapid change in future virtual environments.

Title: *Donkey Kong Country*
Platform: *Super Nintendo*
Developer: *Rare,* **Publisher:** *Nintendo (1994)*

Donkey Kong Country was one of the first games on a console system, to utilize pre-rendered 3D graphics (in this case the environments) , a technique that was in later years to be heavily used in games. Given the technical limitations of the Super Nintendo, this was a extremely innovative and revolutionary development that resulted in a rich, impressive array of environments in the game.

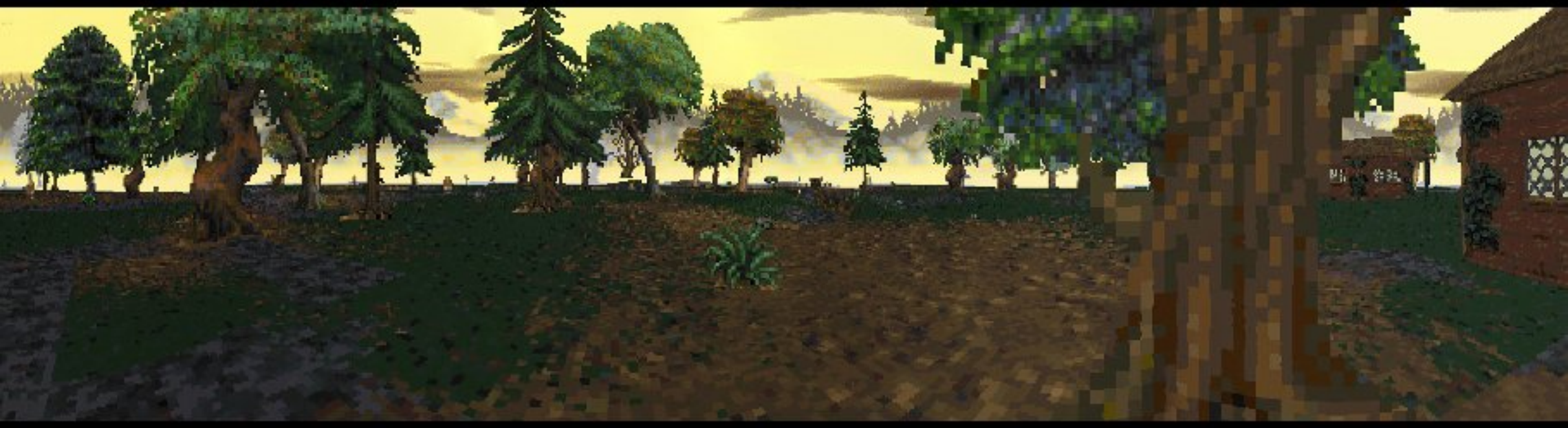
Title: *Shannara*
Platform: *PC-DOS*
Developer: *Legend Entertainment,* **Publisher:** *Legend Entertainment (1995)*

Title: *Once Upon A Forest*
Platform: *PC-Win*
Developer: *Sanctuary Woods,* **Publisher:** *Sanctuary Woods (1995)*



Title: *Albion*
Platform: *PC-DOS*
Developer: *Blue Byte Software*, **Publisher:** *Blue Byte Software (1996)*

Albion, a role playing game that was a strange mix combination of science fiction and traditional fantasy, allowed players to explore strange alien world ,consisting of three islands (Nakiridaani, Gratogel and Maini) and two continents. The alien landscapes varied from mountian ranges to vast deserts to tropical jungles.



Title: *The Elder Scrolls II: Daggerfall*
Platform: *PC-DOS*
Developer: *Bethesda Softworks,* **Publisher:** *Bethesda Softworks (1996)*

Daggerfall, Bethesda's second in '*The Elder Scrolls'* series expanded upon the world started in Arena. Daggerfall takes place in Tamrial a fictional continent that expanded the virtual provinces in Arena to now include the areas of High Rock and Hammerfell. Daggerfall was a huge virtual world, even by modern standards, with Bethesda's claiming that the scale of environment was equal to a landmass twice the size of that of the UK, with over 15,000 cities, towns and dungeons. The scale of the game was only made possible due to using randomly generated terrain, rather than hand crafted artist constructed terrain which although unique would have made the scale of Daggerfall unachievable.

Daggerfall built upon the scale and complexity of the natural environment in Arena, with the terrain in Daggerfall being evolved further. Daggerfall utilized multi level terrain, as opposed to *Arena's* single flat plane, although still crude by modern standards, the terrain had depth, one could traverse the land and actually experience movement on the Z axis(as opposed to simply wandering on the x,y plane), a feature later to be expanded upon further in the following TES games. The variety of sub-environments was also expanded, from traditional western inspired forests to snowy mountains, deserts, to strange tropical landscapes complete with flora and fauna, as well as basic, crude natural landscape debris (boulders, wooden stumps)

Title: *Guardian Heroes*
Platform: *Sega Saturn*
Developer: *Treasure Co. Ltd*, **Publisher:** *Sega (1997)*

Title: *Banjo Kazooie*
Platform: *Nintendo 64*
Developer: *Rare*, **Publisher:** *Nintendo (1998)*

Banjo Kazooie a single player platform game created by RARE, in which the player took on the roles of Banjo (a honey bear) and Kazooie (a red bird that sat in Banjo's backpack). The game was set in Spiral Mountain, and was split into nine smaller themed areas, with the main gameplay mechanic focused around exploration and collection of jigsaw pieces and musical notes needed to 'unlock' further areas. The themed themes areas were stereotypical representations of certain natural environments and ranged from Mumbo's Mountain, Treasure Trove Cove, Bubblegloop Swamp, to Rusty Bucket Bay and Click Clock Wood.

Banjo Kazooie's environment illustrates how the 'ant farm' perspective was reinterpreted into 3D following on from the legacy design laid by earlier 2D games that used this approach. Extruded block form geometry was used to simulate hills and mountains on the terrain. This approach was used as a system by designers to restrict access to the specific parts of the environment in order to align progression with the gameplay/narrative. For instance players could only traverse the lower part of the terrain freely, with additional items, gained through completing quests, usually tied to the narrative, needed to 'unlock' access to both additional levels (often themed around a natural feature such as a lake, mountain or forest) and different sub-areas within a level, otherwise inaccessible without specific items.

Title: *Zelda Ocarina of Time*
Platform: *Nintendo 64*
Developer: *Nintendo EAD*, **Publisher:** *Nintendo (1998)*

Zelda : OOT continued the adventures of the hero 'Link' and Princess Zelda (of whom the series is named after) in his quest against the series main protagonist Gangondorf. The game was extremely received well by gamers and noted for successfully and authentically evolved into 3D, which was a considerable challenge given the critical reception that the previous games (the last of which was *The Legend of Zelda: A Link to the Past* on the Super Nintendo) had received

Ocarina Of Time was the first 3D, free roaming game in the long established *Zelda* series of games. Set in the fictional kingdom of Hyrule, the game was based around a central hub area (in this case Hyrule field) from which a range of diverse environments (*Forest temple, Gerudo Valley, Kokiri Forest, Lake Hylia, Lost Woods etc..*) could be accessed.

Title: *The Legend Of Mana*
Platform: *Playstation*
Developer: *Square*, **Publisher:** *Square (1999)*

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Zayn
CREATIVE

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 a unique, hidden aspect within Computer & Video Games, the virtual natural landscapes.

Virtual Landscapes: The Transition Era visually illustrates the period from 1990 to 1999 that marked the decline of 2D natural landscapes from the 'Embryonic Era' and by the emergence of true 3D technologies which would radically shape virtual landscapes in the years to come. From the intricate, picturesque landscapes of *Kings Quest 5*, the isometric forests of *Landstalker,* through to the beautiful mysterious lands of *Kyrandia*, and finally the magical forests of *Zelda: Ocarina of Time*, *Virtual Landscapes* presents these virtual spaces for the first time, in stunning unseen digitally enhanced. high resolution and panoramic forms.

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