

# Fully Destructible

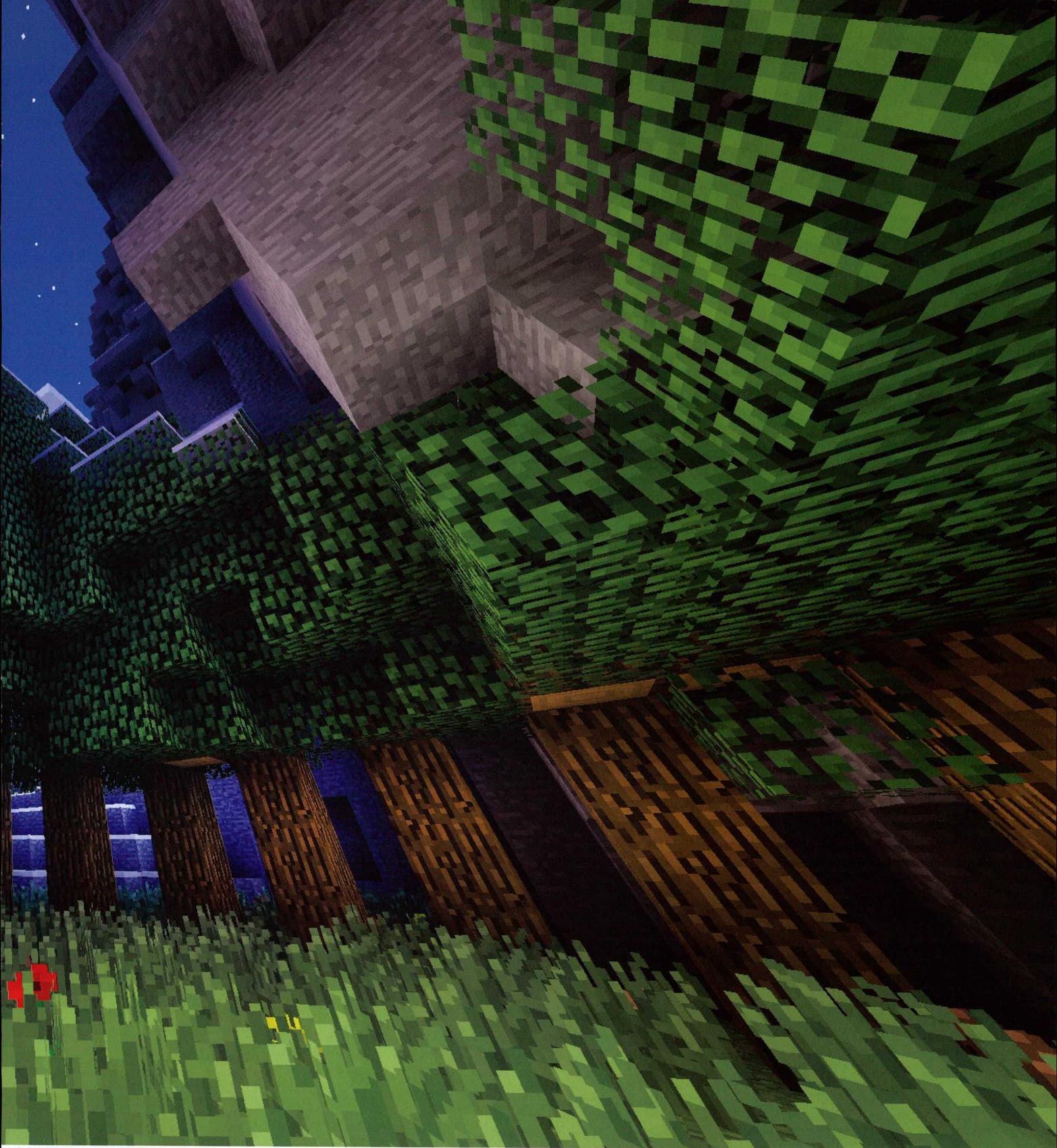
Exploring a personal relationship with nature through video games.

**I**N HIS BOOK, *The Grasshopper Games, Life and Utopia*, Bernard Suits defines the act of playing games as “the voluntary attempt to overcome unnecessary obstacles.” It’s easy to dismiss playing games as an impediment to the real-world experiences

required to develop an environmental ethos.

Video games seem especially emblematic of Western society’s retreat from nature and a widespread, willful neglect of real and profound environmental challenges during the past 40 years. As the population has shifted toward a predominately urban and media-saturated experience, many recreational

activities have been virtualized and much community-scale interaction has been lost. The criticism levelled at a screen-dominated electronic culture – its physically disposable nature, the pollution and habitat destruction associated with its manufacture, and its profligate use of energy – would seem to apply especially to gaming, a non-productive



*Treehenge – creating the experience of sacred space in Minecraft.*

and potentially socially isolating activity.

But like any modern technology, video games have both positive and negative aspects. While urban environments restrict access to nature and the virtualized environments of many video games seem like caricatures of the physical world (for now), gaming provides an interactive

experience that can support learning and awareness of the otherwise inaccessible natural world. The artful construction of the simulated environments in video games – which aspects of reality are simulated, at what fidelity and where they sit on the spectrum between realistic and fantastical – can offer experiences that are

not feasible with traditional media or even direct contact with nature.

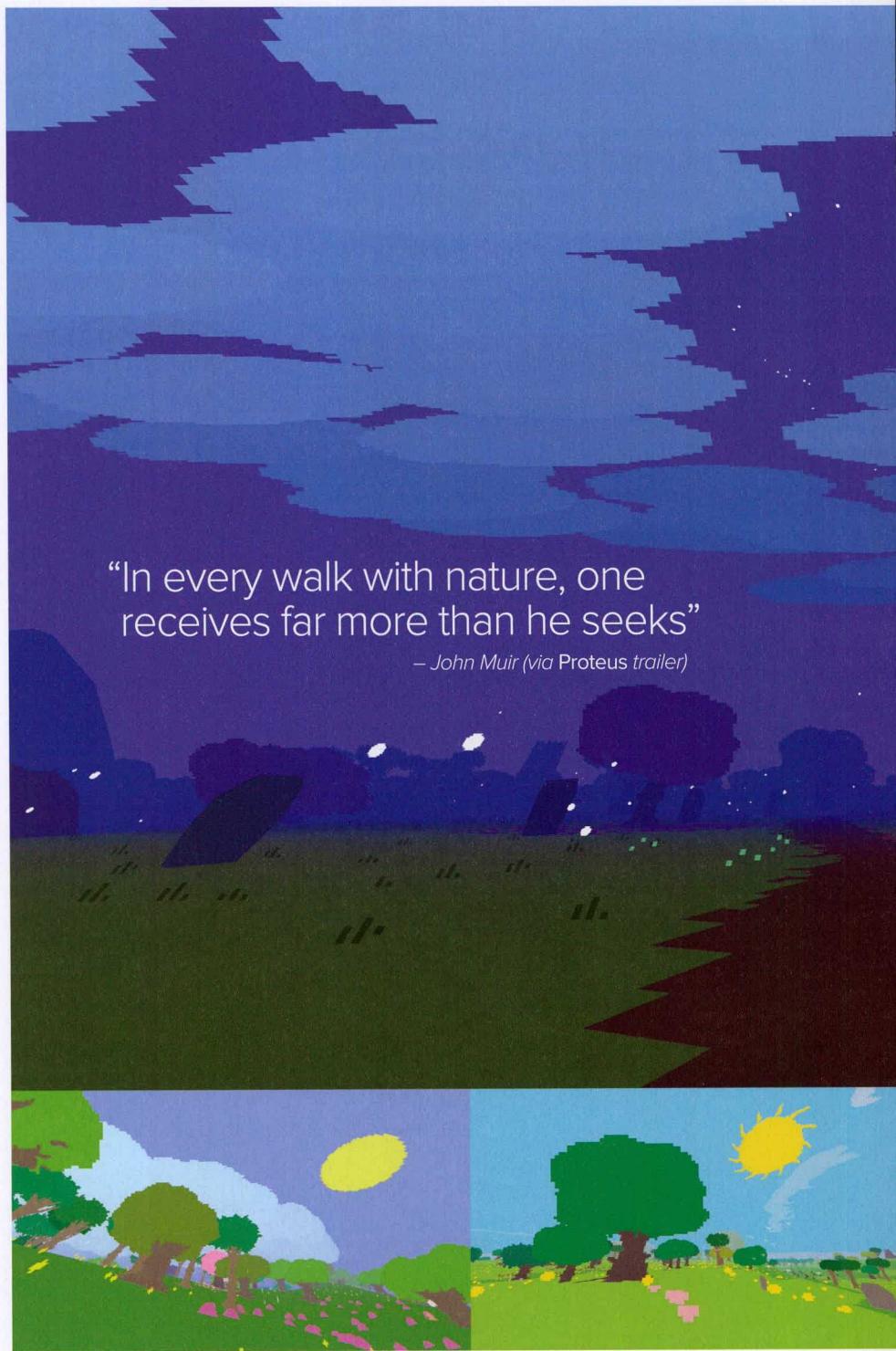
The first commercially successful video game was Pong, released a mere decade after Rachel Carson's *Silent Spring*. During the four decades since, video games have evolved from simplistic, twitchy tests of reaction times and endurance, created

over months by individual programmers. They now encompass cinematic virtual experiences with budgets comparable to Hollywood films, crafted over years by hundreds of people. In a similar fashion, the environments in video games have matured to cover the gamut from *Pong*'s formless void to believable, simulation-driven spectacles that use the same special effects technologies as modern films.

However, in recent years an 'indie' developer scene has been rethinking the expensive realism and large-scale production values that constitute a video game. Limited budgets are driving individuals and small teams of developers to experiment with minimalistic styles and explore themes and taboos that would normally be considered beyond the purview of mere games, such as mortality, morality, economics and abuse. Humans develop and learn by playing, and that includes video games.

A player's experience and abilities within a game are defined in many ways through the design of the digital environment, constraining the gameplay mechanic – the actions available to the player to overcome the game's obstacles. The mechanic dictates how the simplified reality within the game supports a specific type of play, including the ability to replay scenarios and explore alternative approaches. The basic simulation technology underlying the environments of many video games is either cellular automata (2D) or box modelling (3D). Essentially, the reality being simulated is broken down into a 2D or 3D grid of boxes. The state of each box in the grid is determined algorithmically at each moment by a calculation that takes into account the initial state of the box, as well as that of adjacent boxes. The variables tracked in a simulation can be as simple as whether or not the box is black or white, on or off, or something much more complex.

Box modelling is at the core of many climate simulations used in scientific research. These models track a large number of variables (temperature, air pressure, solar influx, wind speed and direction, etc) but the basic process is the same as that of video games. Environmental scientists rely on digital simulations to gain insight into climate change. But unlike video games, a key element that research simulations cannot provide is a first-hand experience of what it is like to be in that altered, forecasted world. Just as scientific modelling can inform rational policy decisions on a global scale, video games can inform environmental ethics at an individual one.



"In every walk with nature, one receives far more than he seeks"

– John Muir (via Proteus trailer)

## Proteus

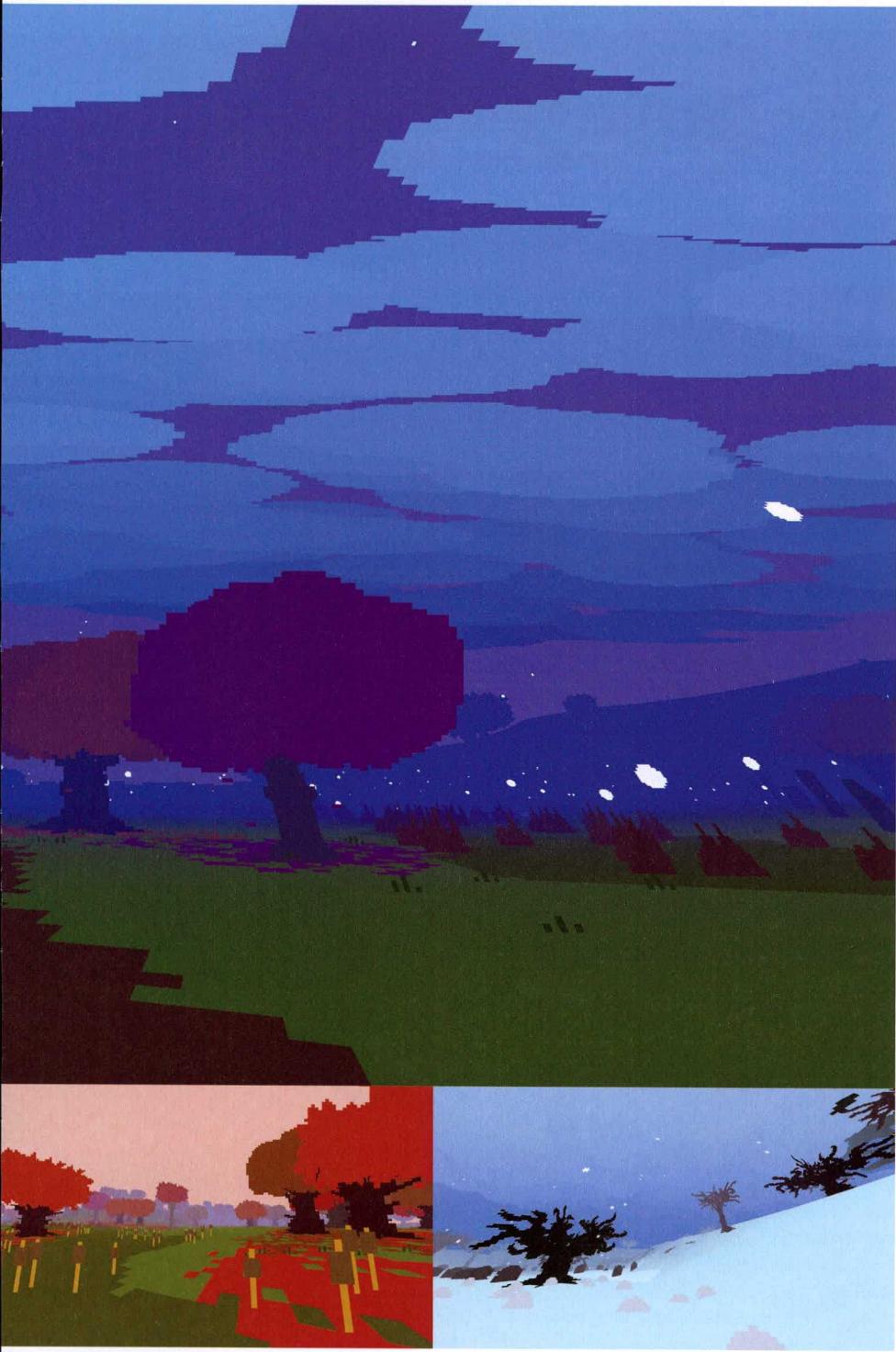
*First-person 3D exploration in a procedurally generated open world – created by Ed Key & David Kanaga (2013); Linux, OS-X, Windows, PS Vita, PS3.*

[visitproteus.com](http://visitproteus.com)

**IN GREEK LEGEND**, Proteus was the god of "elusive sea change," gifted with the power of prophecy. The ever-mutable son of Poseidon could also change form to escape captors and not be forced to reveal

the future. The video game *Proteus* reveals the mystery of the player's inevitable future by metaphorically exploring an individual lifetime within nature's grander cycles.

Imagine a bright, cartoon island full of creatures and plants that live out their entire lives through four seasons, from spring to winter. The player emerges from the ocean as the eponymous character to explore a randomly generated landscape (novel structures and terrain created by a complex algorithm). The game literally consists of strolling and observing the cycles and



rhythms of nature in an idyllic landscape.

*Proteus* generated controversy within the gaming community. Some critics accused its minimalist graphics and gameplay – the only actions available to the player are walking and sitting – as not even constituting a game. It was derided as a walkabout. But its surprisingly engaging, non-violent and stripped-down exploratory experience quickly made it a fan favourite. *Proteus* has succeeded because of its minimalism, not in spite of it. The deceptively simplistic graphics

have a non-threatening 8-bit cuteness that forces players to interact with the digital environment on a symbolic level, concentrating on the core experience over the details.

Time in *Proteus* is highly compressed. The year is broken up into four seasons. Each night and day cycle lasts about 15 minutes and the game can be played to completion in roughly an hour if a player spends only one day in each season. (A season can also last as long as the player cares to linger.) The changing weather and

the rising and setting of the sun and moon are highlighted, and players can rapidly traverse the small environment and flexibly explore its ever-changing vista.

As a landscape painter who has focused on observing and depicting nature for 25 years, this opportunity to repeat and quickly modify my viewpoint has led me to a new understanding of what constitutes an engaging scene. It has also driven home the notion that how I choose to observe my surroundings is intimately tied to my connection with them.

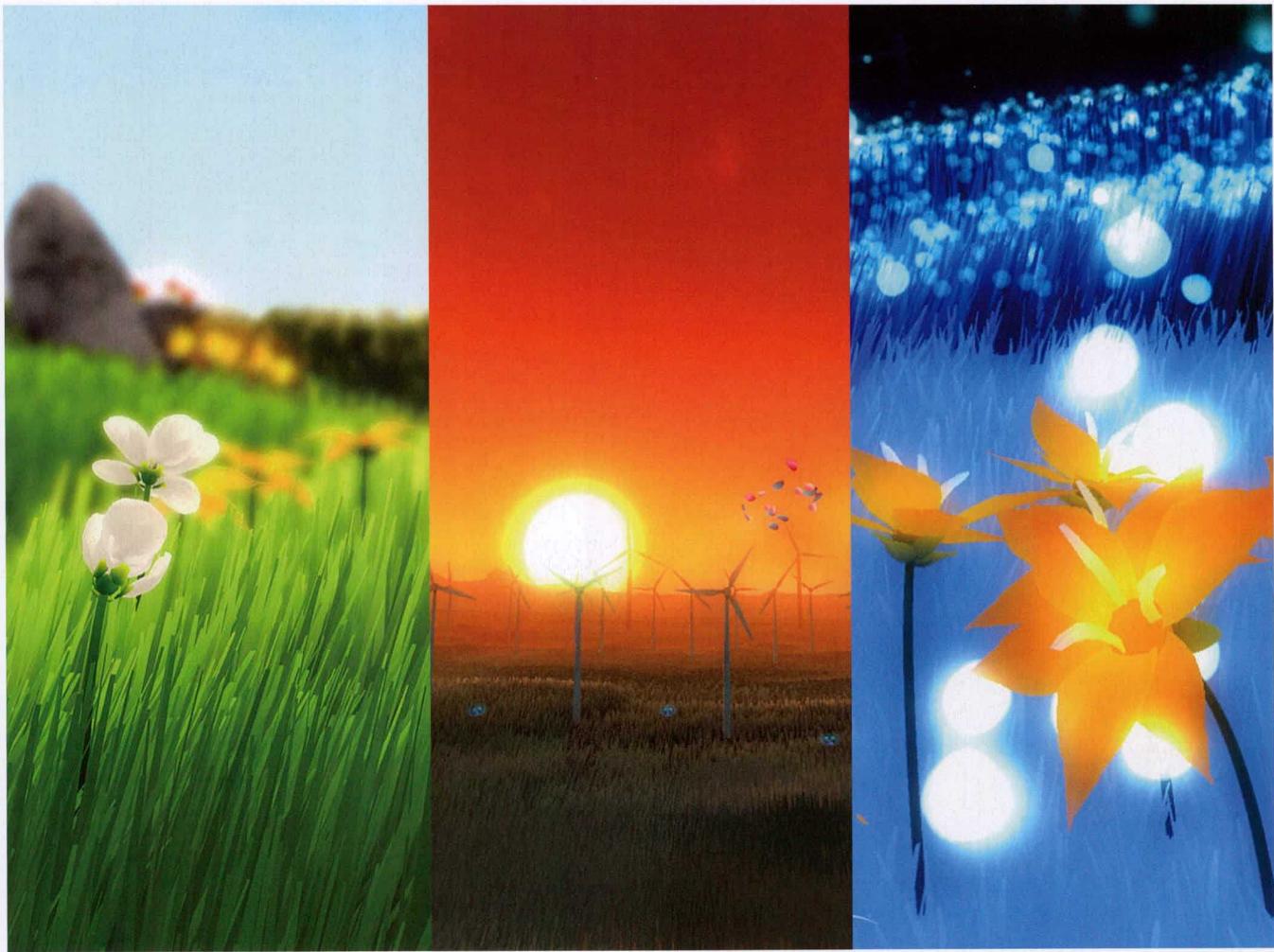
The cycle of the seasons allows players to quickly experience how the landscape's entire ecosystem changes with natural cycles. Creatures and plants that emerged in spring grow old and pass away while retaining their recognizable identities. Watching a flock of 'birds' dying on the ground – when just minutes before they flew through the sky – can provoke a profoundly emotional response and evoke a strong sense of impending mortality.

Players consciously choose when the transition between seasons occurs. During the first night of each season, a vortex of glowing lights appears within a circle of standing stones and is a portal that the player must step into to advance to the next season. Approaching the center of the circle allows players to speed up time to watch days and nights passing in a quick time lapse. Stepping into the centre triggers a fade to white and the season advances.

This magical interlude is not a singular marvel within the game. Several locations on the island are associated with transcendental experiences and once-in-a-real-lifetime events. Spectacular meteor storms or sky-spanning auroras occur with relative frequency. Alongside the understanding of nature's cycles, the game captures a deep sense of nature's wonder and mystery.

**Spoiler alert:** Winter in *Proteus* concludes with the player's death and teaches a powerful lesson about the lack of separation between human life and the environment that sustains it. Death creeps up, and in the moment of realization that life is coming to an end, a feeling of calm pervades alongside an understanding that mortality is simply another observable pattern on the island.

I did experience a brief moment of panic when I first realized the game was ending beyond my control. Yet this feeling quickly transformed into a sense of loss – not for myself, but for the undisturbed nature that I was leaving behind. Death in *Proteus* is a profoundly selfless moment that identifies the larger rhythms and cycles of nature, in stark contrast to sheltered urban living.



## Flower

First-person flight simulation with linear world design created by ThatGameCompany (2009); PS3, PS4, PS Vita.

[thatgamecompany.com/games/flower](http://thatgamecompany.com/games/flower)

**THE JOURNEY** in *Flower* begins inside of a dingy, drab apartment in the middle of an unnamed city. Gameplay starts by clicking on a lone flower on a shelf below a window, which transports the player to a colourful, open, lush, grass-filled landscape completely devoid of human presence. You assume the role of the wind and fly around, bending the grass and pulling petals from flowers into your breeze. As a player collects petals, new areas of the landscape can be explored.

Playing *Flower* is an exhilarating experience. The initial beauty of the landscape and the sense of freedom is a stark contrast to a claustrophobic urban existence. The player is returned to the apartment after levels are completed, indicated by a new flower on the shelf that turns the formerly drab apartment noticeably brighter and more colourful.

**Spoiler alert:** *Flower* consists of six levels that form a coherent, environmentally focused narrative. The first level presents nature unspoiled. The second continues this theme, but tasks you with making the landscape bloom. The third finds you powering wind turbines and sustainably integrating technology with the environment. The fourth begins innocently enough, depicting a nocturnal agrarian landscape crossed by power lines, presumably connected to the wind turbines. You interact with the crops, metaphorically pollinating the fields with light until a downed power line marks a dramatic turn in the emotional mood of the game. The claustrophobic and harrowing fifth level forces you to navigate a ruined and increasingly hostile environment overcome by technology, represented by the twisted black metal girders of collapsed transmission towers. The final, triumphant level sees you freeing the city from the mechanistic towers that choke it, reestablishing a sense of control and optimism that the city can be redesigned as a sustainable and life-affirming space.

Jenova Chen, director of California-based ThatGameCompany, is focused

on designing games that allow players an emotionally charged, ego-free experience that is characterized by extreme engagement and focus. His earlier games, *Cloud* and *Flow*, dealt with weather manipulation and living as a microscopic organism. Similarly, *Flower* creates a sense of identification with elemental nature and makes its threats visceral and personal.

Wordlessly, the design of *Flower*'s landscapes and levels convey an environmental narrative, beginning with a sense of wonderment at the cheerful biome and the freedom to explore it. When the player reestablishes control and liberates the city, the joy engendered by the initial, unspoiled nature of the first level is reaffirmed. In this way, the game confronts the feeling of being powerless to affect large-scale environmental change, focusing instead on pure emotion as a connection point with nature that can motivate positive action. If this is escapism for the urban-bound dweller, it is more an embrace of nature's phenomena as an integral part of sustainability than a rejection of the city. By providing such a simple but dramatic surrogate for experiencing nature, *Flower* nurtures a strong sense of stewardship.



## Minecraft

First- or third-person 3D exploration role-playing game in a procedurally generated, fully modifiable open world created by Markus "Notch" Persson & Jens "Jeb" Bergensten (2009); Linux, Android, iOS, Windows, OSX, PS3, PS4, PS Vita, Xbox360, Xbox One, Java.

[minecraft.net](http://minecraft.net)

**THE PLAYER AWAKES** without any tools, resources or knowledge about how they got to a deserted landscape populated only by wildlife. She or he is free to explore without limitations. As night falls, however, the charming and harmless landscape becomes overrun with hostile "mobs" – zombies, pigmen, skeletons and giant spiders, to name a few – and players must learn to extract resources from the environment to build protective structures and craft items to survive.

*Minecraft's* sales, awards and critical reception make it arguably the most successful indie game of all time. Its landscape is composed entirely of one-metre cubes, and an algorithm generates its hills, lakes, rivers, forests, ravines, sprawling cave systems and mountains as the player

explores. For all intents and purposes, the world of *Minecraft* is infinite – the total surface area is more than 9 million times that of Earth – and it is comprised of several biomes, ranging from desert to plains and swamps to mountains. There are dozens of types of minerals to be mined and collected. Nearly 200 individual items can be crafted, and they can also be combined to build larger, more elaborate machines and structures limited only by imagination. The simulation technology underlying the game is sophisticated enough to allow a recapitulation of the entire history of technological civilization, from primitive wood and stone tools, through agriculture, right up to factory-sized computers capable of running algorithms and displaying animated outputs on giant screens.

*Minecraft* can be played either as a single player or while connected to online servers that allow several people to collaborate or compete within the same world. Many players choose to import real-world ethics and phenomena that are not encoded into the multiplayer game; social innovations such as economic models and cities, or group activities such as sports, can emerge. Some players choose a non-violent or

vegan approach, making moral decisions to limit how their own actions exploit the game's landscape. As one of the first truly open-world games, *Minecraft* forces players to explore and modify the landscape to achieve their own set of goals without any instructions or guidelines. It poses a fascinating question: What would you do if you could rewind time and find yourself on an unspoiled Earth?

Initially, I simply explored. When threatened by the mobs, I built a modest home to spend the night in safety. I explored simple technologies and harvested coal to craft torches, and began to explore the caves underfoot to pass the time until sunrise. It didn't take long to become dissatisfied with a modest life in harmony with my surroundings. The desire to create something larger took hold.

Without questioning the consequences of my actions, my extractive activity ramped up very quickly. I set about clear-cutting forests for fuel and strip-mining the landscape for building materials. I worked my way up through the stone and metal ages, constructing a sprawling castle and terracing the hills to grow food for the people I imagined would live there. My

preconceived notions of civilization dictated what should exist within the landscape, and I wanted it all to be plausible. Roads emerged to connect structures, and I laid large areas to waste as the need for raw materials outstripped the surface supply.

A fully destructible world is normally considered a desirable feature in a video game (and a no-brainer sell line in game advertising). Before *Minecraft*, however, this idea had only been realized in limited ways, such as specific structures that could be destroyed or damaged, but never an entire landscape. Within *Minecraft*, everything is mineable, everything is craftable.

I joined a multiplayer server, and together we ramped up our activity to an industrial level. When it became hard to find areas on the map that were close enough to travel to conveniently, we built mass transit systems to move avatars and materials to construction sites. Similar to the real world, we chose to build our structures in unspoiled areas and hid evidence of our resource extraction from view, mining in remote locations or underground.

At the peak of our “civilization” we built what is known as a “mob factory,” a massive structure designed to exploit the natural ecosystem by automatically slaughtering

thousands of animals, then conveniently sorting and conveying their raw material to a central collection point. One of the primary goals was to amass gunpowder – the by-product of killing an explosive creature known as a “creeper” – and combine it with sand to make TNT. Why did we need the TNT? To strip-mine sand in large quantities to make even greater amounts of TNT, because it seemed the easiest way to extract large amounts of minerals by blasting out quarries. Without questioning our actions, we had taken an unspoiled world and recapitulated the timeline of our disastrous, real-world society.

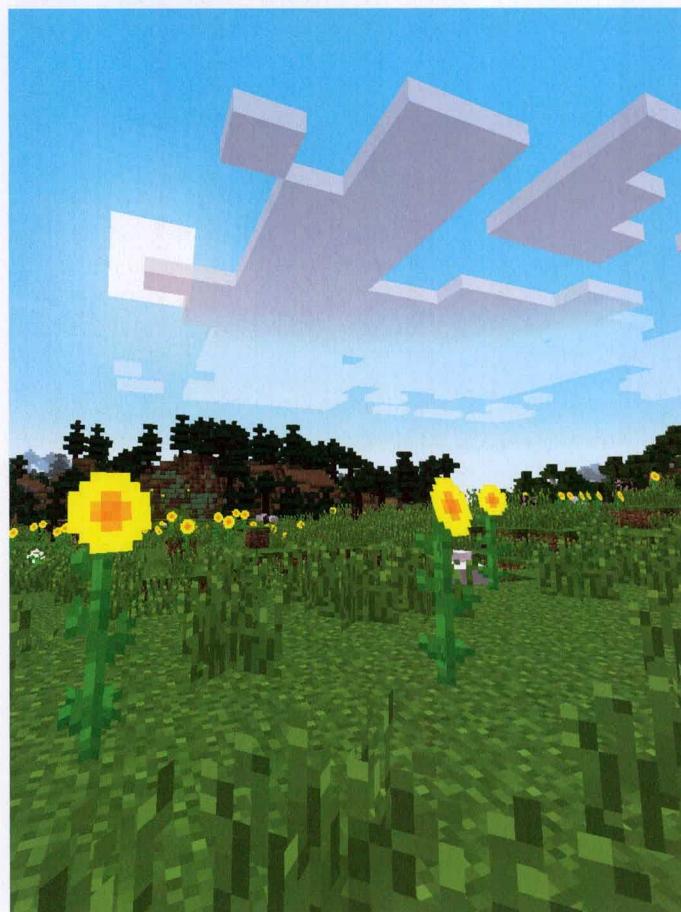
Eventually our moderator installed software on the server to generate satellite-view maps of our civilization. What we had done was sobering. At ground level our wastelands had their own Burtnsky-like charm, but from a cartographer’s view they were horrifying. We had cut down entire forests and our quarries were huge, ugly scars; we had begun to sprawl across the landscape. While the world was infinite, it had become impossible to explore it within any practical timeframe without running across evidence of human activity. In seeking to overcome our natural limits, we had – in a very real sense – ruined our natural world.

The experience of actually despoiling undisturbed terrain – albeit virtual – forced a hard re-examination of the choices I had made within the game, and by extension my choices in the real world. I had an awareness of environmental challenges and how they came to be before playing *Minecraft*, but the experience of unwittingly mirroring history made me more mindful. It has become harder to simply blame history for our predicament because I now understand how possible it is to damage an environment through an escalating series of small, unthinking decisions that make specific sense at the time.

I still play *Minecraft*, but my activities have changed. I spend more time simply exploring and appreciating the landscape. Now when I build my own structures, they are ruins rather than contemporary habitats. Two major features of my crafted world are a massive, forested underground cave and a giant canyon, both much grander in scale than what the game would otherwise create. The game has become about finding, creating and fostering sacred spaces that evoke a sense of wonder, beauty and dramatic naturalism. **AJ**

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nik harron is a landscape artist and AJ's hyper-talented graphic designer.



## Simulation vs Reality

WHILE VIDEO GAMES may seem escapist and trivial at best and damaging and wasteful in their use of resources at worst, simulated experiences are not simply child’s play. In 2003, philosopher Nick Bostrom published a paper, “Are you living in a computer simulation?” in *Philosophical Quarterly*. Bostrom argued that we are most likely living within an “ancestor simulation” being conducted by our future descendants.

Grossly simplified, the argument runs like this: If humankind ever becomes technologically sophisticated enough to simulate a reality containing conscious minds that think and experience their simulated reality in a way that is equivalent to how we experience our world, then the only limit to the number of people that could exist would be the amount of computing power available. Assuming that current trends extrapolate, it is feasible that the number of simulated minds would be greater than the number of real minds by many orders of magnitude. In other words, it will become more probable over time that we will live in a simulated reality, because each of us is more likely to be guided by a simulated mind than a real one.

Bostrom’s paper has inspired research into whether or not we could actually detect if we are living in a simulation. “Constraints on the Universe as a Numerical Simulation,” a paper by Silas R. Beane, Zohreh Davoudi and Martin J. Savage, proposes that we can measure predictable physical limits that are inevitable given the grid-based nature of any simulation. If predicted limits are found, it could be proof that our reality isn’t real. **AJ**

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