Let's try something bold. Let's start from the assumption that games are an important form of contemporary art. What kind of art are they? Most often, critics discuss games as a narrative art, as interactive cinema, or participatory storytelling. But perhaps we should consider another starting point, viewing games as a spatial art with its roots in architecture, landscape painting, sculpture, gardening or amusement-park design.

Game worlds are totally constructed environments. Everything there was put on the screen for a purpose — shaping the game play or contributing to the mood and atmosphere or encouraging performance, playfulness, competition or collaboration. If games tell stories, they do so by organizing spatial features. If games stage combat, then players learn to scan their environments for competitive advantages. Game designers create immersive worlds with embedded rules and relationships among objects that enable dynamic experiences.

Effective game design can yield spaces that encourage our exploration, provide resources for our struggles for dominance, evoke powerful emotions and encourage playfulness and sociability.

Games draw inspiration from sports (contests over goals or field position) and board games (contests won and lost according to movements around the game board); they also tap literary and cinematic genres, that climax with spatial contests (the shootout in a western, the space battles in science fiction). A hybrid form, games get their focus on space both from sports and from stories.

Stripped to their simplest elements, the earliest digital games consisted of little more than contested spaces. Picture Pac-Man, gobbling his way through a simple maze and trying to avoid getting caught by ghosts. As game technology improves, the potential for creating complex and compelling spaces seems unlimited. Strategy games, such as Civilization or Age of Empires, transform the entire globe into their game board, casting players as the rulers of expanding nation-states locked in a struggle for global domination. Modern equivalents for the backyard, fields and woodlands where previous generations played capture the flag, first-person shooters like Castle Wolfenstein, Doom, Quake, Serious Sam or Unreal Tournament pit players in primal struggles over more localized spaces, such as warehouses, rooms or corridors.

The shift from the top-down maps of Civilization to the through-the-gunsights perspective of the shooters suggests a much more immediate, moment-by-moment participation in the struggles for spatial dominance. Single-player games feature linear levels that are not meant to be explored, but rather 'cleared' of hostile creatures, while multiplayer levels feature multiple overlapping paths with dangerous intersections. Exceptional players learn to read tactical possibilities from the spaces themselves. Drawing on a concept from psychologist James Gibson, game designers design spaces or objects for their games which offer players certain 'affordances', spaces or objects embedded with potentials for actions, such as hiding and shooting at other players.
**The Art of Contested Spaces**

**Bottom left**

Half-Life creates a diverse array of contested spaces. Here, Freeman needs to enter the red side of this pit. He can only do so by first throwing a grenade across the invisible moniker. This is just for a mind-expanding experience. Half-Life adapts a first-person perspective and offers a more adaptive environment; characters react to their environment and the obstacles can be repurposed to allow for more creative problem solving.

**Bottom centre**

Inspired by early graphics games, such as Asteroids, Snood lets players fire brightly colored orbs at the screen, hoping to match up shapes, and clear the board. Successful players can move to more complex puzzle levels. Snood provides a rare active framing, encouraging players to find pleasure in process rather than story. Yet the colorful shapes are given personalities, expressed through their affected facial expressions, which add a dash of whimsy.

**Bottom right**

The image from Morrowind shows how spatial storytelling can play out in a more linear fashion. In the design of spatial environments, players choose among bridges and portals, and each choice has potential implications for situations the character encounters. The more the character develops, the knowledge he acquires, and ultimately, the shape of their narrative experiences. This mosaic of environments and the focus on natural materials (wood, stone, or rock) reflect the game's roots in J.R.R. Tolkien's Lord of the Rings books.

**Below**

In early electronic games, players were confined to one space, no more complex than a simple room or a maze of a gameboard. In Berzerk the player was trapped in a room surrounded by gunning aliens who attacked from every direction. Players could move only by stepping on a button that might serve as a shield and which paths were, of course, dead-end. Berzerk's world was hostile and claustrophobic, with little chance of being a survivor, since each path led to another room, full of aliens. You played until you died, hanging on for dear life against the constant risk of seeing how high a score you could rack up.
Centre
Shigeru Miyamoto’s Super Mario Brothers sought to recreate a child’s magical memories with unknown spaces. When I was a child, I went hiking and found a tree that was quite a surprise for me to stumble upon. When I travelled around the country without a map, trying to find my way, stumbling on amazing things was a delight. I realized I felt to go on an adventure like this. The spirit, the state of mind of a child who enters a cave alone must be realized in the game. In such a state, he must feel the cost of his arrival, how he must discover a branch off to one side and decide whether to explore it or not. Sometimes he loses his way.

Bottom, left and centre
Set is a fully realized, visually distinctive representation of the land of the sky, created by Mexican folk culture, art deco architecture, and film noir. The game’s designer Doris Palms, an employee of the Department of the dead, set is a quest to uncover corruption in the world. Miyamoto’s design was to create a world that is both fair, filled with hearts and souls, and to a clown. This scene evokes a sense of foreboding through its use of light and shadow, with flowing lines of fabric and folk art representations of the dead.

Bottom right
Rayman is a more recent exploration game which makes its hard work through exploration into the environment. This game encourages the exploration of the environment, not the player’s physical movements. As in the early Miyamoto games, the player can explore either the surfaces but the cartoonish abstraction of the environment helps to qualify the stylization of the game. Player control is achieved through a variety of elements: butterflies that fly ahead of the player or a waterfall he passes under. The game is set in a world where making a significant impact on game play.

Building on early exploratory games, Shigeru Miyamoto, who mastered the Mario Brothers and Zelda series for Nintendo, revitalized the medium with his focus on innovative virtual environments. The bright colours, friendly skies and beckoning caverns of Super Mario Brothers create a childlike realm that encourages play and exploration. Miyamoto rewards the player with magic mushrooms, gold coins, hidden treasures and secret worlds that can only be unlocked by inventive play. In Game Over, David Sheff explains how Miyamoto extensively charted his game space. When a game was nearly completed, he spread out his blueprints across a room full of tables that had been pushed together. The blueprint was the map of a game’s pathways, corridors, rooms, secret worlds, trapdoors and myriad surprises. Miyamoto lived with it for days, travelling through the game in his mind.

Miyamoto’s focus on spatial exploration helped define the aesthetic features that distinguished electronic games from previous forms of play. He innovated a genre known as the “scroll game”, where players move left to right through a space that unrolls before them. Exploiting 3D modelling tools, more recent games seek stronger depth cues, allowing players to move through space in any direction including from foreground to background.

Game designers draw a distinction between games with “hard rails”, which tightly structure the player’s movements to unfold a predetermined experience, and those with “soft rails”, which are multidirectional and nonlinear. Rayman 2 is a spatial exploration game with relatively hard rails, masks its prestructured trajectory through creative spatial design. The game makes effective use of off-screen space to hint at further adventures around the next corner. Its basic building blocks – caverns, tunnels, bridges, rivers, paths, ledges – provide narrative rationales for various constraints on our movement.

Game designers use spatial elements to set the initial terms for the player’s experiences. Information essential to the story is embedded in objects, such as books, carved runes or weapons. Artifacts such as jewels may embody friendship or rivalry or may become magical sources of the player’s power. The game space is organized so that paths through the world guide or constrain action, making sure we encounter characters or situations critical to the narrative. Such characters may propose quests or reveal clues, but the player decides whether or not to accept those missions. Game designers refer to such devices as embedded information, finding that they allow for deeper and more flexible game experiences. As Tim Shafer, lead designer on LucasArts Grim Fandango, explains, the challenge of game design is to lead the player along a predetermined path without making them feel that they are being controlled. Few, if any games, rival Grim Fandango’s artful meeting of this challenge.
THE ART OF CONTESTED SPACES

Bottom left
Deus Ex modelled many of its locations after real-world spaces, such as Liberty Island in the early game level, complete with the New York skyline in the distance. A terrorist group has blown the head off the Statue of Liberty, and is holding a government agent hostage in the statue, a familiar scenario of contested space. As Warren Spector notes, this focus on real spaces set high expectations for players with which game designers struggled to meet.

Bottom centre
In SSX, the arrows, blowing flags, swooshing sounds, and sweeping camera movements convey snowboarding’s speed and motion. Hidden spaces, such as the space beyond this arc or beneath a jump, build and release tension, shaping the rhythm of the action. Game engines frequently exaggerate players’ movements and impact in the environment, as the swathe of plowed snow in this image reveals.

Bottom right, opposite page
In Black & White, Peter Molyneux wanted to introduce a stronger focus on choice and consequence. We start the game with a pristine world. The player controls a gigantic creature who affects the environment – rescuing children, digging out trees, smashing houses or erecting buildings. In controlling this creature, the player competes with other gods for the devotion of the game’s inhabitants. The villagers form moral judgments on the creature’s actions based on a combination of deontology (the morality of the action in and of itself) and utilitarian (the effect of the action on the community as a whole). Good moral choices transform the world into a flowering garden.

Many critics have assumed that gradual improvement in game graphics will ultimately make game spaces indistinguishable from their real-world counterparts. Yet, those game designers who explore photorealistic imagery often discover that achieving realism involves more than improving image resolution and may not be what players desire.

Deus Ex takes place in a dozen environments, most of which are modelled after real spaces. Yet, as producer and director Warren Spector notes, "believable settings raised expectations to unrealistic levels." Spector wanted every element, from the design of the space to the development of the interface, to contribute to a powerful sense of "being there." He argues that well-designed game environments present players with clear goals, so that the player is encouraged to identify problems and derive plans; each space has multiple entry and exit points; and there are always multiple paths around obstacles. According to Spector, these spaces create "possibility spaces," spaces that provide compelling problems within an overarching narrative, afford creative opportunities for dealing with these problems and then respond to players’ choices with meaningful consequences.

Games like Tony Hawk 2 or SSX promise players a realistic sense of what it would be like to participate in extreme sports. Often, they start with the challenge of re-creating actual locales and arenas as well as duplicating styles and moves associated with specific sports stars. Sports game designers note that they are responding to player expectations shaped as much by watching the sports on television as by playing them directly, so they build into the games aspects of the broadcast experience, such as voice-over commentary or instant replays.

Much as in actual snowboarding, game mastery demands mastery over the run, knowledge of the specific contours of the game space. Game designers provide bumbs, jumps and ramps for players to perform tricks. The result is not realism but rather "immersion." The realistic elements contribute to our sense of being there, whereas various forms of exaggeration perfect the real-world experience, making it even more exciting.

Many game designers are recruited from art schools and many continue to paint and to scan through art books searching for inspiration. As a consequence, a close consideration of game space reveals a broad range of aesthetic influences, including Expressionism (which maps emotions onto physical space) and Romanticism (which endows landscapes with more qualities). As game designers dig deeper into these artistic traditions, they may develop more emotionally evocative and meaningful spaces.

Bad moral choices darken and scar the world – most specifically the creature who evolves into a physical reflection of the morality of your choices. We can thus read off the world whether our decisions are virtuous or evil. Such a metaphorical mapping of morality onto the physical environment has its roots in Romantic art and literature. The Romanticism of Black & White is underpinned by its simple villagers, who live off the land in small huts, and are imbued with a strong sense of innate moral code and communal good.

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Romantic influences might also be felt in the elemental images of earth, water, fire and air running through Sacrifice. The game centres around the competition between gods and demons for human souls. Such games celebrate heroic struggles to master inhospitable environments, depicting nature as a destructive force that actively threatens human will.

Brenda Laurel’s Secret Paths games, designed for girls, offer a more nurturing relationship to the natural world, promising possibilities for contemplation rather than mastery. Laurel explained that girls wanted a place to go where they could daydream: ‘they thought that the garden/forest would be a place where they could find out things that would be important to them.’

Realism is another modern art movement that has influenced game design. The Surrealists created dreamlike images which, nevertheless, followed many conventions of representational art, often deploying familiar stories (such as those in the Bible) as a basis for psychologically complex, symbol-laden environments. Similarly, game designers exploit the graphic possibilities of 3D modelling to create immersive environments that are vivid and tangible and yet totally imaginary.

American McGee rose to prominence as a level designer, making memorable contributions to Quake and Doom. When Electronic Arts offered him the chance to develop his own game, he turned towards an unanticipated topic – Lewis Carroll’s Alice in Wonderland. In the distinctly gothic Alice, his protagonist dwells in a mental asylum, having been driven insane by her inability to discern whether her Wonderland adventures are real or hallucinations. She is drawn back to do battle with the Red Queen and her evil minions. We know these spaces – the rabbit hole, the lake of tears, the Red Queen’s garden, and so forth – from our childhood, yet they are disfigured and distorted by Alice’s demerited perspective.

Giants: Citizen Kabuto is another game set in a Surrealist landscape with fantastic creatures, its icons seem to drip off the screen like Salvador Dali’s melting clocks. It unfolds in a world largely devoid of man-made structures, a landscape of earth, rocks and sparse vegetation, rendered in bright blues, yellows and greens.

As Steven Poole argues in Trigger Happy, few games have really embraced the Surrealist aesthetic. While many games borrow visual cues from Expressionism, most are relatively conservative when it comes to modelling reality, bending to, rather than eschewing, basic physical laws. Giants: Citizen Kabuto suggests how Surreal elements might enrich future games.
At the same time, players never fully control their characters. They suggest possibilities for action or shape their environment to encourage certain choices, but their instructions are read against preprogrammed values, needs, urges, goals, and priorities which are the basic defining traits of these characters.

Centre
In this cityscape from Shenmue, the buildings and walls are made of hard, cold surfaces like brick and cement, and painted in muted colours. As Ryo walks along these lonely streets, we hear the distant sounds of dogs barking and cats meowing, as well as the more immediate noise of his footsteps on the shiny pavement. Ryo can duck into the telephone booth in the distance to contact his allies. The silent wandering of the street becomes a mechanism for initiating his low interest, and he will meet an older man who trains him in karate in the park around the corner. Despite rather linear game play, what one carries away from Shenmue is its overwhelming melancholy and lyrical images.

Game designers increasingly focus on the overall 'mood' or emotional colour of their projects. Hoping to produce games that can provide a broader range of emotional experiences, they draw inspiration from classic melodrama, where elements of the mise en scene become emotional correlatives for the protagonist's woes.

Yu Suzuki situates characters in more 'everyday' environments. His epic role-playing game Shenmue is set in a small Japanese village, circa 1986. The game's adolescent protagonist, Ryo, struggles against the men who murdered his father. Grey skies and snowy streets contribute to the game's sad, contemplative mood, expressing Ryo's experience of mourning and loss.

Myst, the dream project of Rand and Robyn Miller, was another game that received high praise for its atmospheric design. The artfulness of Myst invites us to linger and contemplate, like visitors in a museum. Myst's reputation as a 'thinking person's game' ultimately has less to do with its puzzles than with its amber colour scheme, its Rembrandt-like play with light and shadows, and its fascination with the textures of the material world.

Many people who don't know much about games assume they are socially isolating, that players always play against the computer. Solo play is one mode among many. Videogames originated in arcades before being marketed in the home; many preserve opportunities for spectacular performances best appreciated among friends. Playing alone often becomes a way of honing skills that are then deployed in shared competition. New interfaces encourage players to dance, beat drums, shake maracas or manipulate tummles; these games are called 'embarrassment sims' because they create amusing situations for parties. Multi-player games, such as Asheron's Call, borrow lessons from urban planners to create opportunities for sociability, becoming the centre of vast 'virtual communities', and other games, such as The Sims, encourage players to create content actively and share it with the fan community, designing clothes, objects and buildings that constitute these virtual worlds. The Star Wars multi-player online game sought player advice from the very beginning of the design process. Many next-generation games like Neverwinter Nights and Morrowind are packaged with powerful but easy-to-use editing tools that are expected to be more successful than the game content itself.