The 13th International Philosophy of Computer Games Conference, St Petersburg 2019

A Lattice and a Sneaker. Digital Games as "If-Images"[1]

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Introduction

The most obvious distinctive feature of computer games is interactivity. The term "interactivity", however, has too many meanings and therefore is misleading. Of course, it is possible to physically manipulate the medium of the game, to have control over images and sounds, but it does not imply that other types of interactivity are always present. In a single player game, for example, there is no communication with other people. Also, there is no correlation between the number of physical actions available in a game and its openness to interpretation (Skomorokh 2014: 53–55). We definitely can interact with a game in a certain way, but the question remains open what follows from it—what kind of artistic language emerges and what it is like.

Interactivity is hardly an accidental feature of digital objects, so it cannot be studied independently from the digital. The digital, in turn, cannot be reduced to interactivity, but at the same time it speaks itself to the full extent only through interactivity (of course, to become an opposite of itself in the end).

The digital in a broad sense is any discrete data—data that is unambiguously divided into discrete units. According to a new media researcher Florian Cramer, even such an ancient invention as alphabet is a digital system (Cramer 2015: 17–18).

Another new media theorist, Lev Manovich, points out that digitization (converting continuous data into a numerical representation) happens in two steps: sampling and quantification. Sampling transforms continuous data into discrete data—a set of samples. Then samples are quantified: each one is assigned a numerical value. In Manovich's opinion, the difference between old and new media lies in the second step, quantification: old media sometimes incorporate discrete data, but never quantified data (Manovich 2002: 49–50). Though it is important to distinguish these two steps, below I will show that simple digital encoding was used in art long before the appearance of new media.

Also, according to Manovich, due to quantification new media objects can be algorithmically manipulated (Manovich 2002: 49). It means there is a connection between digitality and interactivity: algorithmic manipulations allow implementing user interactivity based on automated feedback from the system. I would argue that even the first step of digitization,

[1] This paper is a translated and updated version of the original paper in Russian: Skomorokh M. (in press). Algoritmicheskaya estetika: if-obraz kak forma soprotivleniya ischislimosti koda [Algorithmic Aesthetics: The If-Image as a Form of Resistance Against the Calculability of Code]. In V. Savchuk (Ed.) *Trudy Tsentra mediafilosofii XIV. Kritika tsifrovogo razuma* [Publications of the Centre for Media Philosophy XIV. The critique of digital reason]. Saint Petersburg: Akademiya issledovaniya kul'tury.

sampling, already opens access to scripted manipulations. It is convenient to perform recurring operations on discrete data, and interactive art exploring these possibilities existed since ancient times: it used such techniques as combinatory permutations and automatic generation.

What truly distinguishes new media is that today operations on data are as easy as never before. Computers accelerated them to the point when a step change occurred, and a new type of experience—and of art—appeared. To clarify what exactly changed, I am going to make a brief historical overview of digital art before the digital era.

The Digital before the Digital

In his classic work *The Art of Programming*, Donald Knuth outlines a brief history of combinatorics (Knuth 2011: 486–513). He shows that at early stages combinatorics was applied to certain cultural phenomena, which seem to be far removed from mathematics. Knuth mentions, for example, *I Ching*, ancient Indian and ancient Greek poetry, dice games, Kabbalah. In a nutshell, combinatorics as an area of mathematics originates from attempts to theoretically understand cultural forms based on combinatorial principles.

Knuth also mentions a combinatorial issue related to the so-called protean poetry, or permutation poetry (Knuth 2011: 500–503). It is of interest as one of the early examples of truly generative and, to some extent, interactive art. Protean poetry was most common in the 17th century, but existed already in Classical Antiquity: the first permutable poem is attributed to a 4th-century Latin poet Publilius Optatianus (Cramer 2000: 1–2).

The term “Proteus verse” was supposedly coined by an Italian scholar and poet Julius Scaliger. He illustrated it by his own monoverse *Protues*[2]: “Perfide sperasti divos te fallere Proteu” (“Wickedly you hoped to deceive the gods, Proteus”). By shuffling these six words, one can create 720 versions of the poem, out of which 96 match the meter of the initial line, hexameter. The main character is changeful as the poem itself. The sea god Proteus, after whom the genre is named, was renowned for the ability to shapeshift. Permutations, however, do not change the meaning of the poem too much—it looks like the perfidious Proteus was never was to deceive the gods (Göncz 2013: 14).

One more type of (proto-)digital art is combinatorial / generative music. The idea was for the first time articulated by 11th-century Italian music theorist Guido of Arezzo, who was renowned for his contribution to musical notation. In his treatise on musical notation, Guido outlines an algorithm that allows generating melodies from texts by establishing certain links between notes and letters (Nierhaus 2009: 21). It is remarkable that the idea of automatic generation immediately followed the invention of notation—in other words, when the data is discrete, it is tempting to start manipulating it.

Since the 17th century, attempts were made to develop a mechanical composing machine. The idea of such device was introduced in Athanasius Kircher’s work *Musurgia Universalis, or the Great Art of Consonance and Dissonance*, inspired by the philosophy of Ramon Lull

[2] As Dick Higgins notes, “whether it named or was named for the genre is a subject still open to discussion” (Higgins 1987: 183).

(Nierhaus 2009: 24–25, Zielinski: 143). In the Baroque literature, the idea of a text-generating machine, also inspired by Lull, was explored (Schäfer 2007: 133–137).

In the 18th century, in Europe a parlor musical game was popular: by rolling dice, players randomly generated music pieces from short fragments (as a rule, bars) pre-written by a composer. The first dice game was designed in 1757 (Nierhaus 2009: 36). The most famous one, *Musikalisches Würfelspiel* (*Musical Dice Game*), is attributed to Mozart—it contained 176 bars and allowed creating a waltz (Collins 2008: 155–156). All actions were manually performed by players: they had to roll dice, combine the selected bars, and perform the piece.

In the 19th century, a number of machines were built that were able to generate music automatically—for example, the Componium by Dietrich Winkel, an automatic organ with a built-in aleatory mechanism (Gardner 1988: 91).

Protean poetry was reborn in the 20th century as Dada poetry. In 1920, Tristan Tsara published an instruction on how to create a dadaist poem: he suggested that one cut a newspaper article into separate words, mix the words, and randomly put them together (Tzara 1975: 382). Jean Arp used a similar principle to create random collages of paper pieces.

In the Baroque art, which is characterized by a complex play of freedom and order (Lobanova 1994: 161–163), randomness of permutations is balanced by a relative stylistic and at times conceptual uniformity—due to musical harmony, poetic meter, the careful orchestration of the generating text. Dadaist art, as Cramer points out, is, on the contrary, governed by "indeterminacy and chance" (Cramer 2000: 2). However, according to Kurt Beals, it only seems chaotic—it is possible that Dadaists were inspired by the logic of new technologies such as the telegraph, which established a new relationship between the sender of the message and the content. For example, sometimes senders used ready-made messages from special code books. It allowed reducing the length of messages, but the sender was no longer a full-fledged author of the content (Beals 2013: 7–8).

Digital computer was designed by Charles Babbage way back in 1833 and implemented in 1941. Dadaists, therefore, witnessed not only the telegraph but also the genesis of contemporary digital technologies. Later, when digital computers and digital art appeared, non-computer permutational art continued to exist (and still exists).

In this period, for example, a widely known protean text was created by Raymond Queneau. Queneau was a founder of Oulipo ("Workshop of Potential Literature")—a group of writers and mathematicians, founded in 1960 to explore how mathematics could be applied to art. One of Oulipo's aesthetic principles was using strict constraints (Funkhouser 2007: 33–34). In 1961, Queneau published a book *A Hundred Thousand Billion Poems* (Queneau 1961): 10 sonnets, each consisting of 14 interchangeable lines, which results in 10^{14} possible permutations.

This overview makes no claims to be complete—its sole purpose is to show some general trends. Combinatorial art can be found in most different cultural contexts and is based on different philosophical and aesthetic principles. In particular, chance and order related to each other in different ways, and different meanings were assigned to this principles. However, the techniques that were used to manipulate data share a common feature: all of them are quite transparent for users. In most cases, users had to execute algorithms manually: to combine words or roll dice and then interpret the result[3].

As I will show below, computer uses much more complex mechanics and is no longer transparent for end users. Interactions now tend to happen at the bodily level without involving the intellectual level, and as a result a new aesthetics emerges, which could hardly be reproduced in a non-computer form.

Sampling, quantification, scripted operations on data (blurring the line between generation and perception), and even automatic generation of data—all these techniques, in one form or another, were available since very old times. Computer technologies and the aesthetics they give rise to cannot be reduced to a single key characteristics. Rather, the invention of computers allowed orchestrating a set of well-known artistic techniques in a new way and creating a new assemblage of the user experience.

Hypertext and Virtual Reality

Marie-Laure Ryan, comparing hypertextual literature[4] and virtual reality, notices that interactivity (of all types) works differently in these two art forms. In virtual reality it facilitates immersion, and in literature it draws attention to its medium, language, thus making the text more self-referential (Ryan 1999: 131–132).

In Ryan's opinion, the reason is that even "passive" reading requires sufficient mental effort to simulate sensory data, and there is no room for increasing mental activity even more. When mental effort is spent on interactions, the imagination is no longer able to maintain the simulation of sensory data required for immersion. Virtual reality, on the contrary, offers enough sensory data—audial, visual, tactile—and users get immersed effortlessly since there is no need to use imagination. Moreover, in literature the tools of interactivity are signs, and in virtual reality the interface is the body, so interactivity—the physical participation—only reinforces the sense of physical presence in the virtual world (Ryan 1999: 132–134).

Ryan's paper was written in 1999, and by virtual reality she means a simulation produced by a head-mounted display and data gloves. She remarks that the technology is flawed: the generation of visual data lags behind the movements of the head (Ryan 1999: 123). Today, the responsiveness in virtual reality environments is no longer an issue . At the same time, it is clear that ordinary real-time games, especially 3D games, are also quite immersive and make the body work like an interface.

Text-based multiplayer virtual worlds (MUDs and MOOs) also, according to Ryan, resolve the conflict between immersion and interactivity, at least partially. She attributes it to two factors: users are very invested in playing their roles, and words are similar to gestures (Ryan 1999: 130–131).

[3] It is remarkable that proto-digital was already characterized by paradoxes inherent to digital (computer) art. The same techniques engage the audience in interaction with the piece and partially exclude human contribution to its creation. The author is just a person designing an algorithm, and the piece itself is is co-created by users or by the play of chance.

[4] An example of hypertext is *A Hundred Thousand Billion Poems* (Queneau 1961), mentioned above.

Interactions in text-based games are performed with the help of special commands: “get” to put an object in the inventory, “kill” to start a fight, and so on. During fights, the result of each move is calculated automatically from a number of factors: the power of weapons, the defense of the opponents, the random factor. Though players still have to use their imagination to simulate physical presence, they at least do not have to roll the dice or turn pages, much less make any calculations—all the “dirty work” is performed by the computer. Operations on the text become faster and more sophisticated than a simple selection of the word order or of a narrative branch. Consequently, much more diverse “readings” are possible, and users experience the immersive “freedom of motion”.

In audiovisual games, similarly, the computer calculates movements of objects and how the environment responds to users’ actions. If players had to read the code of the game and “run” it, manually accessing pre-existing sensory data (3D models, textures, sounds, and so on, down to individual pixels) and combining them, also manually or just in their imagination, simulation would become so inconceivably slow and demanding, that pleasure, not to mention immersion, would be hardly possible.

In sum, the aesthetics of digital games is based not on the digitization of sensory data by itself but rather on the way how we use the computer to manipulate digitized data. The work behind the scenes is performed so effectively that gamers do not need to think when they interact with the simulation at the basic level: turn the in-game camera or move the avatar forward. If in these moments gamers think, they think with their bodies—this process is different from the work of the imagination but is also unconscious. For example, mastering jumps in a platformer may require some effort, but it does not mean that one is always able to put the acquired technique into words.

As Alexander Lenkevich and Sergei Buglak show, the avatar in computer games acts as a prosthetic device—an extension of the human body. As a result, the “gamer-body” is produced, which is neither a physical body nor a virtual one. Unlike bodies produced by other media, the gamer-body is constantly mutating since each new game challenges the gamer to master new skills (Buglak & Lenkevich 2016: 406–424).

The complexity of algorithms depends on the type of the game. For example, the structure of visual novels is often quite simple and clear. The only difference from plain hypertext is that text fragments are illustrated by images and, sometimes, voiced over. Most advanced features the technologies can offer are available in other games—the ones where images and sounds respond in real time to the slightest movements of virtual bodies.

In early real-time 3D games, like in virtual reality helmets, the visual feedback slightly lagged behind the user input. In addition, the in-game camera was not able to move smoothly: its movement looked like switching from frame to frame.

In Figure 1, there are four screenshots taken while moving the avatar across a labyrinth in a first-person game *3D Monster Maze* (1982). The frame rate in this game is just 6 fps, and the avatar / camera jerks along, taking considerable leaps with each step. Figure 1 presents frames that immediately follow each other; each frame corresponds to one leap towards the labyrinth wall.

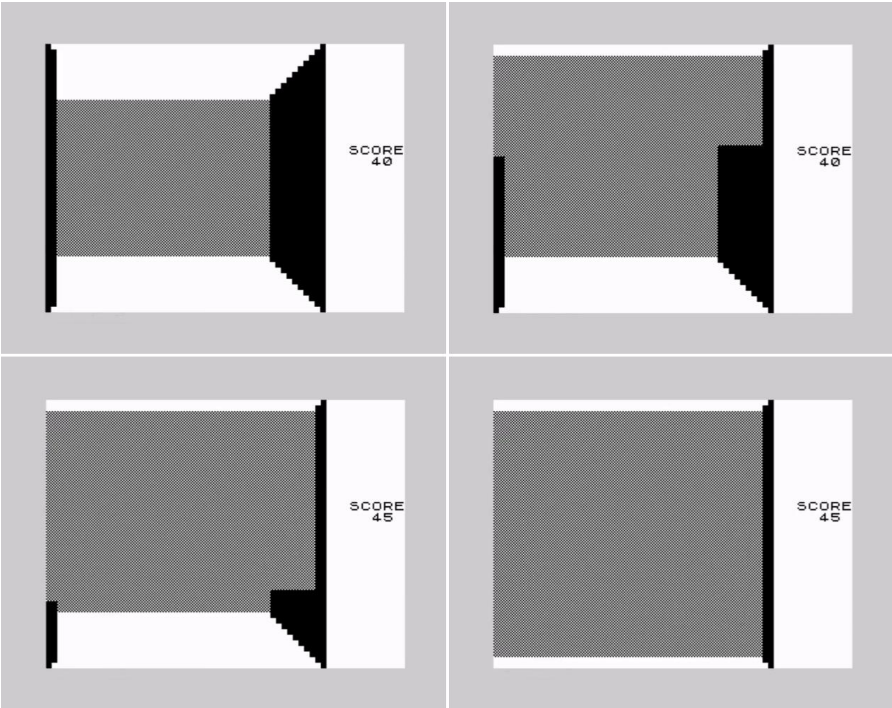

Figure 1 *3D Monster Maze*

As you can see, the new position (the close-up of the wall) is rendered step by step, but in a small number of transitional frames, which is not enough for simulating smooth movement. In contemporary games, the frame rate is so high that it is almost impossible to discern movement when you look at four successive frames. Similarly, there were times when 2D games did not support smooth horizontal scrolling, which is now a standard feature.

We take the effect of smoothness for granted, but the industry took a long time to achieve it. The digital image is discrete, and algorithms are executed step by step, so computer games had, in a sense, to overcome their own digital nature in order to simulate the continuity of presence. Pre-computer combinatorial art could not—and did not even try—to achieve this goal.

The Anatomy of the If-Image

The revolution made in computer games by the real-time 3D technology resembles the way how montage and the mobile camera, according to G. Deleuze, transformed cinema.

In the first chapter of *Cinema 1: The Movement-Image* Deleuze refers to Bergsonian critique of cinema. In Bergson’s opinion, cinema gives the audience a false movement: it works with instantaneous immobile sections of movement (frames), stringing them on a uniform, abstract time. Real movement belongs to the concrete duration of the present and cannot be divided without changing qualitatively, so it and cannot be reconstituted from its instantaneous sections—immobile spatial positions of bodies. The space covered by movement belongs to the past and is divisible, but not movement itself (Deleuze 1989: 1–12).

As Deleuze notes, though cinema operates frames, it is not frames that it gives to to the audience. Instead of immobile sections of movement, or images, spectators see mobile sections of duration, or movement-images. It is achieved mainly through montage and the mobile camera. In early cinema, when the camera was fixed, the shot was determined by space, and movement was attached to people and things on the screen. Later, the mobility of camera and montage allowed emancipating movement and producing the movement-image—pure movement extracted from any objects (Deleuze 1989: 3, 24).

It appears that cinema is a paradox: it is able to produce an effect that is seemingly an opposite of its own inner logic: "Now, because Bergson only considered what happened in the apparatus (the homogeneous abstract movement of the procession of images) he believed the cinema to be incapable of that which the apparatus is in fact most capable, eminently capable of: the movement image—that is, pure movement extracted from bodies or moving things." (Deleuze 1989: 23)

Computer games are characterized by the same paradox. Working with immobile objects and discrete data, they simulate continuous movement. They also go further and use the mobile camera and sometimes montage to extract movement from objects.

Camera movement, as a rule, is linked to the movement of the avatar. The avatar is a "body" in the world of the game, which, however, is different from other bodies: it functions as an interface for exploring them and the world. In first-person games, one cannot even see the avatar, so it is abstracted from the virtual body and distilled down to pure gaze[5]. This gaze fluently wanders across the environment, but, rather than moving through the landscape, it sets the landscape into motion and even transforms it. In some games, such as *Everything* and *What Remains of Edith Finch*, the freedom of gaze is based on the ability to switch between different avatars, assembling their movements together, which resembles montage.

Despite the similarities between movement in computer games and in cinema, there is also a significant difference: in games movement is interactive. Unlike viewers, players combine looking at the screen with actualizing / generating what they see, so the image and its movement as well as the way of seeing itself are, after all, not the same as in cinema.

While all transformations of the cinematic movement-image are predetermined, the image in games is essentially undetermined: at each moment of time, multiple transformations are possible. It should be also noted that at the level of basic real-time interactions with the game, the gap between thought, action, and its visible result is almost indiscernible[6]. Freedom of motion does not, as it may seem, take the form of a branching tree of possibilities. It is manifested as a unified whole—a multidimensional, essentially conditional, susceptible to influence, and yet indivisible *if-image*, which is being continually actualized by the player in the elusive duration of the present.

[5] In his paper on first-person perspective in games, Andrey Muzhdaba argues that the avatar is a pure point of view, and even such a "bodily" mechanics as jumping does not make the avatar more human. To prove this point, the author refers to the observation made by Nikolay Dybovsky, a game designer: real people do not jump while walking. Muzhdaba also notes that the link between the avatar and the gaze was already established in the early days of 3D graphics: in *Maze War*, supposedly the first multiplayer FPS shooter, avatars look like eyballs (Muzhdaba 2019).

[6] Obviously, this does not apply to non-interactive cut scenes and other non-real-time sections of gameplay.

In essence, the source code of the game is discrete. It is a branching tree, and the choice of a branch is always unambiguously determined by certain conditions. The algorithm, though, is not transparent for the player. It is run so quickly that branching is indiscernible[7] (likewise, the great volume of discrete data allows simulating continuality), and the perception is sensory rather than intellectual. The source code is a product of mathematical rationality, but it uses instinctive actions of the gamer-body as an input—it is this paradoxical alliance that gives birth to the if-image.

Cinema is not just a set of immobile frames, and the game is not just a set of choices and possible outcomes. Choice is a continuous process, inherent in the bodily presence and haptic vision (Deleuze 1984; Hansen 2001). Each gaze is a touch transforming the image on the screen, and each touch is a gaze probing the landscape. By touching / seeing the if-image, players perceive its fluidity, multidimensionality, and continuing openness to interaction and change.

Digital systems are able to simulate processes by calculating their progress from certain parameters. The audience of non-interactive digital art just observes simulated processes or their results, drawing only indirect conclusions about the generating algorithm. The audience of interactive art is itself one of the parameters used in the simulation and sees the digital system, so to speak, from within. At the same time, the interaction is not direct—it is mediated by the if-image, which conceals the discreteness of the algorithm.

The best example of how the if-image works is *Panoramical*. In this game, there are fifteen "worlds"—incredibly flexible audiovisual environments. Some of them resemble landscapes, and others are completely abstract. By using the mouse and nine buttons, the player can change eighteen parameters (up to eight simultaneously) of the image and sound, smoothly adjusting them in the real time. The meaning of the parameters is never explicitly explained, and the effect looks and sounds different in different worlds. For the player, it is much easier to engage with this game through bodily pleasure than to understand its mechanics at the intellectual level and put into words how each parameter is used. The continually mutating video- and soundscapes of *Panoramical* are pure if-images, where openness to change is almost completely detached from spatiality and representation[8].

[7] Branching is indiscernible mostly at the level where just sensory data are generated. Narrative branching—the ability to generate meaningful events—seems to be a more slow and clunky mechanics, and usually it is much easier to discern the discreteness of the narrative structure. It is not clear whether the if-image can be found at the narrative level.

[8] It is interesting to compare *Panoramical* to *Hollywood Medieval*—a 1982 program for Atari, which is a similar audiovisual experience but characterized by a simplier and clearer mechanics. Also, both *Panoramical* and *Hollywood Medieval* may have something to do with the culture of demoscene—the art of producing interactive and non-interactive audiovisual pieces (demos) executed by the computer in real time.

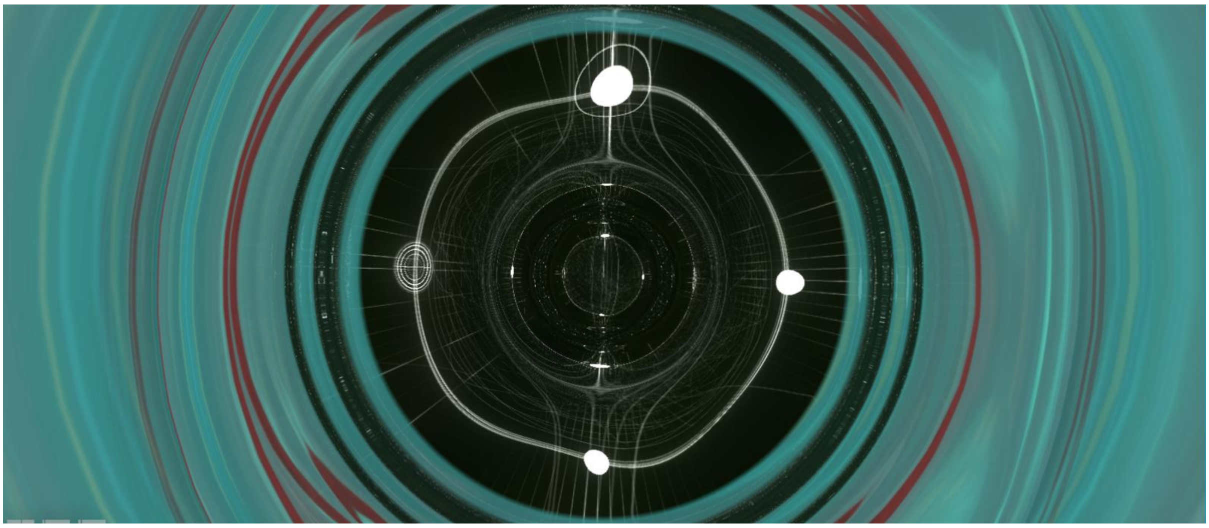

Figure 2 *Panoramical*

Usually, when we interact with a game, it seems that we make the avatar move across a relatively immobile space, changing only the point of view, not the space itself. It is hard to realize that, instead of just "looking around", with every tiny interaction we transform the image we see. Games like *Panoramical* (for example, *Aentity*, *This Is Infinity*, *La Forêt*, *Catacombs of Solaris*) break this illusion and make the mechanics of the if-image more obvious and palpable by departing from realism and, to some extent, detaching visual transformations from the simulated laws of physics.

A Lattice and a Sneaker

When a game, instead of trying to be a perfect illusion of reality, self-referentially emphasizes its digital nature, the paradox behind the if-image and the aesthetics of computer games becomes clear: continuity is simulated by means of a discrete system.

Visual style of *Minecraft* is deliberately discrete: textures are made up of large pixels, and all objects are made up of cube. From a distance, though, the its procedurally generated landscapes look surprisingly natural and integral. Combining the highly conventional cubic style with the real-time 3D and random generation technologies, *Minecraft* draws attention to the magical shift from the discrete and ready-made to the continuous and unique.

Figure 3 *Minecraft*

Paintings also require some distance: when you come too close, they disintegrate into brush strokes. Strokes, however, are different from pixels: while each stroke is unique and bears the stamp of the author’s individuality, pixels are just ready-made building blocks. It is game worlds that are unique, and they are built from these blocks by the machine and the player, not directly by the author.

Actually, in *Minecraft* an intriguing dialogue between digital aesthetics and the aesthetics of painting takes place. There is a decorative entity looking like a painting, which randomly displays one of 26 images, mostly based on paintings by the Swedish artist Kristoffer Zetterstrand. In their turn, most of the paintings used in the game play painting off against computer graphics: on some paintings traditional painting techniques are combined with pixel art, and on others landscapes from computer games are depicted. *Minecraft* neutralizes this opposition: it reproduces Zetterstrand’s pieces in such low resolution that it becomes hard to distinguish details, some paintings being almost completely incomprehensible. Digital aesthetics absorbs the aesthetics of painting.

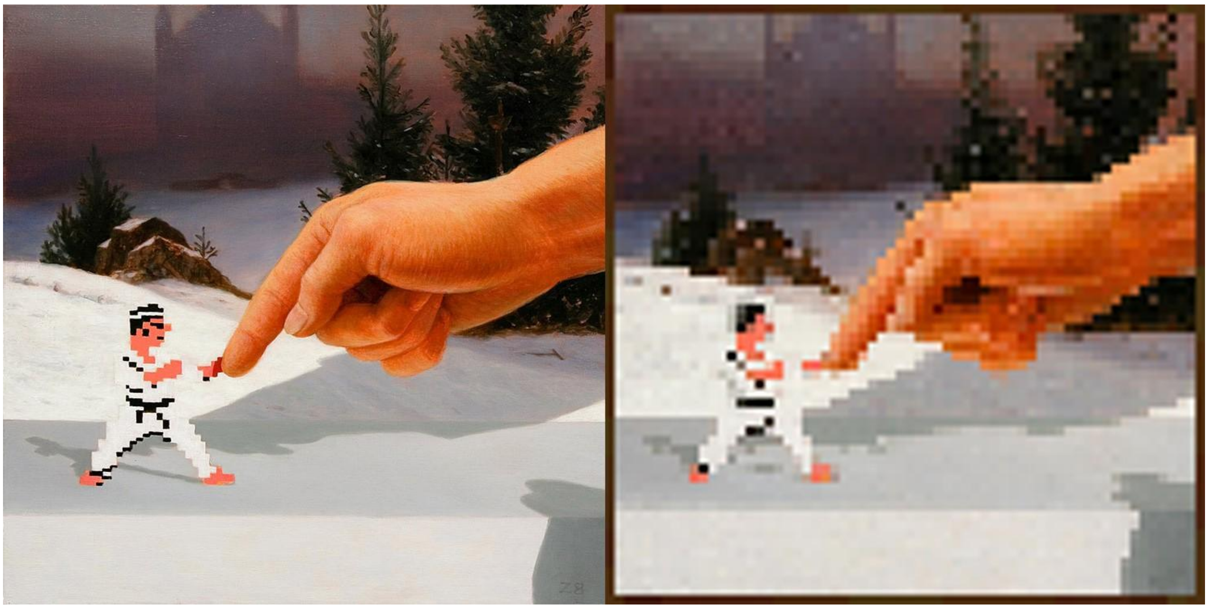

Figure 4 *Pointer* by Kristoffer Zetterstrand (on the left) and its copy in *Minecraft* (on the right)

The game *Proteus*, like protean poetry, was named after the shapeshifting god Proteus. Each time it is launched, an new island is procedurally generated. Its video- and soundscape adjusts to the in-game time of year and dynamically responds to the only action available to the avatar—spatial movement.

In *Proteus*, the paradox of the digital is also contrasted with the remediation of painting. The same object (island) is captured in different fleeting states, which is similar to the impressionist approach to representations (also, the credits of the game mention an impressionist musical piece—the *Daphnis et Chloé* ballet by Maurice Ravel). However, the 8-bit-style pixelated graphics of *Proteus* suggests that here, unlike in impressionist art, fleetingness is a result of automatized processes.

Figure 5 *Proteus*

According to Konstantin Schevtsov, for the philosophy of the digital it is important to distinguish between digits and numbers. Historically, digits appeared with the invention of zero. Zero is used to designate not just a number or the absence of a number but an order of magnitude—in a sense, it contains a whole infinity of numbers, which can produced by just adding zeros to the end of a numeral. The number is a signified, and the digit is a signifier. The number is an essential measure, and the digit is a tool for producing a potentially infinite series, where all numbers come down to different combinations of zero and one—in other words, of nothingness and being, the immeasurable and measure (Schevtsov, in press).

In computer games, the digital machine works so effectively that it generates enough numbers to fill all visible gaps and create the illusion of continuity. When nothingness, which is inherent to the digit, escapes the observation of the player, the digit also escapes, and its place is taken by the if-image, which serves either to conceal the the digital, to overcome it, or to comprehend its antinomies.

The universal and the individual, the abstract and the concrete, the eternal and the fleeting, the artificial and the natural—the tension between these poles is sometimes camouflaged and sometimes problematized, but whatever the case, it makes up the deep content of the digital aesthetics.

In her essay *The Originality of the Avant-Garde and Other Modernist Myths*, Rosalind Krauss addresses the motif of the grid, which was popular in modernist art. As Krauss points out, the grid is antinatural, antimimetic, antireal and sets the autonomy of the realm of art. The grid is also ambivalent: it is universal and spiritual and at the same time material—instead of mapping some space onto the surface of a painting like perspective does, it maps the surface itself (Krauss 1986: 9–12).

The grid, with its lines and gaps between them, can be read as a metaphor of the digital, but of course, it could hardly survive the transition from modernist to digital art without changing its meaning.

In *Lattice*, the player interacts with a flat abstract grid (or lattice), which is a direct reference to the modernist motif of grid and Krauss's work. However, after a while a third dimension is added to the space, more interactions become possible, and deliberately accidental objects start crystallizing out of the grid—for example, a pink sneaker.

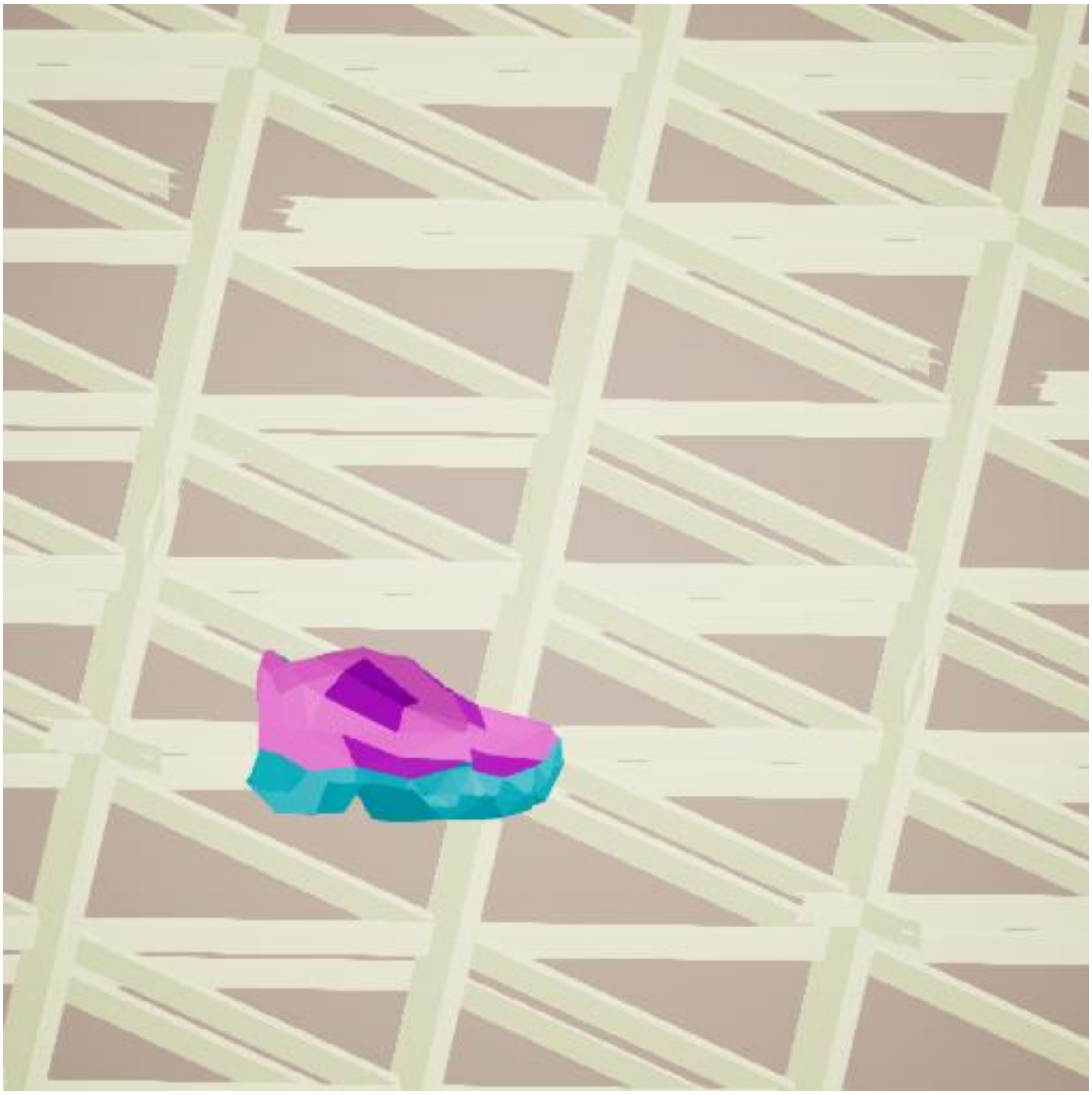

Figure 6 *Lattice*

Right before the player's eyes, *Lattice* makes a shift from the aesthetics of modernist art to digital aesthetics. The universality of the grid no longer comes into conflict with the materiality of the surface it maps (in this case, the screen). Rather, it contrasts with the sensuality and concreteness of the algorithmic simulation, and though it looks as a return to the pre-modernist naivety, the whole situation is new.

The vibrant pink sneaker so unexpectedly generated by the monotonous structure of the grid is a perfect allegory for digital art, in which the universal mathematical machine produces accidental and concrete images. Is the paradoxical (post-)digital naivety just a surface effect or a sign of an ontological shift? This is the main question playfully asked—and not yet answered—by computer games themselves.

Games

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MINECRAFT. MOJANG, PC, 2011.
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