

Game Aesthetics

How videogames are transforming contemporary art

by Domenico Quaranta

New York, 1933. An enormous gorilla falls off the top of the Empire State Building. This scene has long exerted a powerful grip on the collective imagination, to be reiterated in the sixties by Andy Warhol in a few episodes of the series *Death and Disaster*, and more recently in the media representation of the Twin Towers disaster.

New York, 2005. The same gorilla falls off the same skyscraper. This time however we do not see the modernist silhouette of the Empire State Building, beside which even the giant beast looked like a speck in the sky. This time we see the scene through the eyes of the lead character, who has also climbed up to the top of the building in a last-ditch attempt to save the soft-hearted monster.

You immediately start wondering why Peter Jackson, a great admirer of the original *Kong*, decided to leave that magnificent image out of his remake and opt instead for a powerful but decidedly less

vivid subjective view. There has to be a reason for it in the story. In the first *King Kong* the lead character was a victim of the beast's love, while in the remake it is more of a reciprocal thing. The psychological side plays an important role in the story, so it is therefore natural that the viewer is presented with the character's point of view. But this is not enough to justify depriving us of the image we have been waiting for throughout the whole movie. When watching this remake the trained eye of the movie buff has to deal with the "insider's eye view" that videogames have got us accustomed to, and his or her expectations are foiled. The need to experience a story from the inside has taken over from our desire to identify with powerful iconography. *The Passion of the Christ* by Mel Gibson (2004) springs to mind: the tableaux of the passion, the definitive images of this story, are sacrificed in order to ensure that we feel the suffering of Christ in first-person.

I have chosen this example not in order

to show that film, which has played such a decisive role in the development of the videogame, is now in turn being profoundly influenced by the younger medium. There is no need to. Peter Jackson's *King Kong* is clearly game-like, as the Wachowski brothers' trilogy was before it. What I want to look at is the more general picture: how videogames are conditioning the aesthetics and registers of other media.

Info-Aesthetics

What comes after modernism, postmodernism, and new media?

Welcome to INFO-AESTHETICS.

INFO-AESTHETICS is not only the aesthetics of data. INFO-AESTHETICS is the new culture of INFORMATION society.

INFO-AESTHETICS is already here. Do you see it?¹

The fact that digital media are slowly but inexorably transforming aesthetics and our tastes is not a new thing. In *Synopsis*.

Introduzione all'educazione estetica (2005), the Italian academic Fulvio Carmagnola wonders: «So is there something like a set of tastes or aesthetic sensitivities linked to the advent of the new media? And what are its main characteristics?» His response revolves around four points. Firstly, in the new media the act of aesthetic contemplation is replaced by immersion, which on the one hand disorients, and on the other creates a feeling of omnipotence, evident in the "user as demiurge" aspect of videogames. Secondly, hypertextuality does away with the distinction between the roles of author and spectator, generates confusion between various levels of expression, and destroys any sense of temporal depth. Thirdly, the visual takes over from the textual, and the virtual from the physical, destroying the distinction between real and imaginary. Lastly the "life on screen" wipes out the distinction between living and non-living, giving rise to a new form of fetishism. According to Carmagnola, these four points come to-

gether to eliminate «the reassuring categories that allowed us to discriminate, assign a level of certainty to the tangible world and therefore to pass judgment with certainty». Modern aesthetic criticism perceives this setback strongly, and its suspicions are naturally aroused. The new media theorist Lev Manovich, in the introduction to *Info-Aesthetics*, the project he has been working on since 2000, has an entirely different brand of enthusiasm. «A computer: Never before a single machine was an engine of economy AND the main tool for representation. INFO-AESTHETICS needs to reflect this duality.»² *Info-Aesthetics* is a heated encounter between the aesthetics of modernism, child of our industrial civilization, and that of informationalism (Manuel Castells), and it «suggests that the new aesthetics already exists in information interfaces and information tools that we use in everyday life. In other words, new aesthetics of information culture manifests itself most clearly

in computer software and its interfaces. Similarly, I argue that computer applications employed in industry and science – simulation, visualization, databases – are the new cultural forms of information society. The challenge before us is to figure out how to employ these tools to create new art; in short, how to interface them not to quantified data but to human experience, subjectivity and memory».³

The Aesthetics of Videogames

Aesthetics pervades all media, and games are no exception.⁴

Videogames play a decisive role in the advent of this new "aesthetics of informationalism", as the number of games and Game Art projects included in Manovich's as yet unfinished project shows. Moreover, I am convinced that videogames are capable of conditioning its forms and declinations and enriching it with their icons and symbols. In

other words, Game Aesthetics is an important part of Info-Aesthetics. This importance is bound up in the history of the new media. It is a fact that the videogames industry, and the economy it has given rise to, plays a decisive role in the development of the new media, and has conditioned its history. As Bolter and Grusin (1999) note, «soon the arcade games became fully two-dimensional, with figures cruising, running or hopping around as inhabitants of an electronic Flatland, thus anticipating and thus later refashioning the desktop interface as it evolved in the eighties».⁵ The videogames industry has stimulated research into the creation of interfaces as photorealistic as possible, and the construction of 3D, navigable spaces which evolve and change, apparently naturally, in real time. It has also guided the transfer of film into the computer world, which according to Manovich,⁶ has led to the former being its main "cultural interface". The result is that today it is perfectly natural for a game-player to

think, in agreement with Alvy Ray Smith, that reality is composed of eighty million polygons a second;⁷ at the same time, Manovich's statement that «the visual culture of the computer era is cinematic in appearance, digital in the quality of the material and mathematical (that is guided in the program) in its logic»⁸ is perfectly applicable to any videogame. To date the videogame is one of the most popular ways of approaching the new media and it is therefore natural that gain familiarity with it and its characteristics, such as modularity and variability, and forms like the database, through videogame entertainment.

Copying from Videogames, is the Art of our Days

A videogame "artist" is not the one who creates a videogame, but someone who "copies" it. As well as a painter is not the guy who eats a piece of bread, but the one who "paints" it, a videogame "artist"

doesn't even play a videogame but he just extracts stuff from it. It's easy and beautiful. The coolest thing to do!⁹

Art has long stopped being the privileged testbed for aesthetics and its evolutions: sectors like fashion, design and industrial culture often turn out to be more receptive, and at the same time more influential. What this book attempts to do is look to contemporary art to test out the advent of this new aesthetic. We are staking a claim that the new media is changing art, which is once more becoming a culturally and socially influential field of experimentation. The various media revolutions throughout history have always left a profound mark on the development of artistic research. The advent of photography at the end of the nineteenth century completely changed the fate of painting; and the advent of the mass media around the mid-twentieth century gave rise to new symbols, new legends and a new

collective imagination. But videogames are more than just another medium of expression, another way of constructing worlds or generating stories, and they are more than just a new source of material for the imagination, even though they are also both of these things. Like film and television in the days of Warhol, videogames have generated new collective legends, new icons which have entered the iconographic repertoires of artists. In this sense the paintings of Miltos Manetas are the most evident examples of a new breed of Pop Art, with Super Mario instead of Elvis Presley, Lara Croft instead of Marilyn Monroe and the Sony Playstation in place of the tin of Campbell's soup. Like comics in the days of Roy Liechtenstein, videogames have introduced a new style of representation, where polygons replace printing grid-lines and an isometric perspective takes over from Superman's bird's eye view. American artist Jon Haddock's *Screenshots* are the consummate embodiment of this tendency to put a videogame-like

spin on a reality which is already profoundly mediated, to the extent that we are unable to distinguish between the massacre of Columbine and a scene from Francis Ford Coppola's *Godfather*. What's more, videogames offer us new arenas of action, where we can spend an increasing portion of our daily lives, which makes the work of artists like the Italian Mauro Ceolin perfectly legitimate. Ceolin paints polygonal landscapes for game backgrounds with the same style he uses for real landscapes, and the same level of attention that Canaletto dedicated to the bridges, squares and gondolas of Venice. Or the work of Marco Cadioli, who enters into videogames and photographs events, exactly like an embedded reporter following other, no less virtual wars, such as the recent conflict in Iraq. Lastly, as a mass phenomenon, the world of videogames inevitably launches its own fashions, like the Mediaeval look of Massive Multiplayer Online Role Play games (MMORPG) which soon filtered into the real world, giving rise to a whole

set of rituals and collective costume events, fertile terrain for Eddo Stern and his extraordinary sculptures. These works transfer this style to the computer itself, through a series of meetings, stories and worlds that would appear to have little in common with this cold, functional piece of "office equipment".¹⁰ And it goes without saying that the world of videogames has its own regressive, nostalgic movements, like the passion for the era of the 8bit games that has given rise to a lively musical scene, or the urban invasions of the French artist Invader (who materializes the Space Invaders icon in public places, sometimes in subliminal form, but on other occasions decidedly more invasive), and many of the works in this book. The aesthetics of videogames leave the screen to infiltrate reality in many more of these (and many other) projects: in *John Carmack* (2004) Brody Condon pays homage to the inventor of Doom, building him a polygonal monument; the works of Russian collective AES+F use the style of

fashion photography to make bold statements about how the media portrays violence, war and childhood; and the costume by the Swiss artist Shusha Niederberger is designed to transform her body into an avatar.

Playing with Code

...game hacker artists operate as culture hackers who manipulate existing techno-semiotic structures towards different ends or, as described by artist Brett Stalbaum, «who endeavor to get inside cultural systems and make them do things they were never intended to do».¹¹

We have looked at videogames as a source for the imagination, and a new place – both in terms of a new living arena, a setting for life and action, and as a common place, a cultural point of reference, a new source of trends and subcultures. This would be enough to enable us to decree that videogames have all the prerequisites for launching

a new, powerful form of Pop Art, or *uber-pop*, as Matteo Bittanti describes the work of Mauro Ceolin.¹² But besides all this, videogames also provide art with something infinitely more than a simple pop rendering of its iconography, idiom and aesthetics: artists can actually create videogames or modify the software of existing games.

Videogame art is still an emerging sector, in view of the production costs of making a videogame able to compete with mainstream offerings. Moreover, in a day and age when many are beginning to acknowledge the artistic nature of videogames, and when some of the great game designers, such as Will Wright, are coming up with culturally complex products, with declared artistic intent, perhaps it is better to avoid using ambiguous terms like "videogame art". There is however an interesting "alternative game design" scene, at times in the form of little games created in Flash or with other simple game design

tools, and which often reveals a political intention to offer a form of counter-information, in opposition to the ruling ideology of mainstream videogames. There are also more complex, demanding objects (also in terms of production), which introduce alternative narratives or bypass gaming dynamics to focus on the creation of navigable virtual worlds and characters whose psychological development interests us more than their adventures.

Escape from Woomera (2004),¹³ for example, is a videogame developed by an independent Australian collective which uses the form of the first-person 3D adventure game to tell of the daily life of a detainee in one of the most criticized immigration reception and processing centers in Australia, that of Woomera. Meanwhile *Waco Resurrection* (2003),¹⁴ by the American collective c-level, enables the player, in the role of a "resurrected" David Koresh, to rewrite the history of the Waco massacre, which cost the lives of seventy-six members of the Branch

Davidian sect in 1993, under fire from the FBI and American army. *Acnipark* (2001–03)¹⁵, by the Australian group Selectparks, focuses on the creation of a virtual online world waiting to be explored and transformed into a stage for impromptu musical performances. And it is this field of “experimental game design” – which often involves artists but is targeted more at gamers than the art world – which has taken up the challenge to broaden the aesthetic horizons of the videogame, currently stifled by an overwhelming push towards photorealism.¹⁶

One group which springs to mind is the European collective Tale of Tales, which came about from the work of two important exponents of digital art, Michael Samyn and Auriea Harvey (entropy8zuper). The group, which recently produced *The Endless Forest* (2005), a virtual world where action is limited to a minimum and the pleasure of playing consists in exploring a dream-like universe, has been working on a project

called *8* for some years. *8* is a game destined to commercial distribution, innovative both from the point of view of the narrative – it is based on the fairy tale of *Sleeping Beauty* – and gameplay, and from the aesthetic point of view. It takes 3D to a new level in terms of artistic sophistication, inspired by the Orientalist genre in vogue in nineteenth century art. This stylistic choice is also an ideological one, challenging both the proliferation of violent, low quality videogames, and art and society: «I think that *8*, like much of our previous work, is an attempt to bring out a form of non-modern art. We think that modern art has reached a *cul-de-sac* [...] we are trying to bring the artistic experience to a wider audience. I think that videogames are art. In most cases, bad quality art. But most art is bad quality art [...] The idea of creating a non-violent, non-competitive game which focuses on pleasure in itself is an ideological statement. The fact that it offers a positive image of a culture inspired by Islam is also not without ideological

implications in this day and age. I would go so far as to say that creating a game that attempts to be aesthetically-pleasing is an ideological choice in itself».¹⁷ But in order to get his or her hands on a videogame, an artist does not need to create one from scratch. Videogames are an editable medium, and behind their wonderful interfaces lie digital code and software. This means that in Game Art – this is the ugly term which most of the works in this book have ended up being defined as – we find the whole legacy of the impact of the web, hacking, software and IT on the consumption of contemporary art. The aesthetic consequences are just a small part of this impact, which has meant we have had to leave out a number of works that have played a decisive role in the history of Game Art, but the strength of which is not immediately evident in a single image. Editing mainstream videogames is an extremely complex cultural phenomenon, which arose around the mid-nineties following the extraordinary intuition of the

company id Software to distribute Doom (1993) online as shareware. As Tilman Baumgärtel writes, «With Doom, a medium developed out of a game, an opportunity to create one's own worlds. With Doom, id Software put a potent piece of software for creating three-dimensional spaces into the hands of its customers».¹⁸ In January 1994 a New Zealand student, Brendon Wyber, put the Doom Editor Unit in circulation. From that moment on, the idea of customizable games began to take hold, and became increasingly popular not only among users but also among mainstream producers, up to the point of developing virtual online worlds such as The Sims Online or Second Life, where the user's creative input represents an important part of the gaming experience. Artistic modifications or patches may have a range of different aims: to personalize the interface of the game, integrating it with other sense systems; to protest against its ideology; or to deconstruct its interface, revealing the struc-

ture and conventions it is based on, and so on. In all of these cases what the artist does is work with the game's algorithms – as Manovich intends it, not the code as such, but the deep cultural structure of the software.¹⁹ As Anne-Marie Schleiner observes, videogames are cultural constructions which can be manipulated to make them do things they were never originally designed to do. And Schleiner, in collaboration with the American Brody Condon and the Catalan Joan Leandre, was responsible for one of the most formidable hacks that any videogame has ever been subjected to. *Velvet-Strike* (2002) is a collection of pacifist graffiti daubed on the walls of the violent multiplayer game Counter-Strike. Aside from its undoubted political and ideological value – videogames are public places and as such subject to the same forms of social use and revisitation – the project also juxtaposes the videogame's polygonal aesthetics with those of the graffiti, its symbols and icons.

Photorealism versus Abstraction

The photo-real push is almost as established a part of game culture as shooting or driving, and for some it is becoming just as tired. Maybe though, games have to push all the way to photo-realism before intentionally pushing away from it becomes more than a marginal pursuit.²⁰

However, with regards to aesthetics, I think that the “photorealism versus abstraction” dichotomy is the most comprehensive, enlightening key in which to interpret patches on videogames. As we have seen, videogames represent one of the most significant factors, together with film, in the wide-scale development of digital media towards photorealism. This has not always been the case: the white rectangles of *Pong*, like the 8x8 pixel boxes in Super Mario Bros testify to that; and we can only hope that it will not last forever.

The push for photorealism aims to make the sense of immersion in a story increasingly effective, whether it be interactive or not, and to render the gap between fantasy and reality harder to perceive. However, photorealism is a concept entirely alien to the deep-seated nature of the medium in which it is generated, which works with digital data and mathematical equations, and visualizes the images obtained by means of pixels. In this way, while the mainstream media embrace the long tradition of photorealism, it is no coincidence that almost all experimentation with software that aims to produce a visual output, like Generative Art, looks to the abstract tradition of the modernist period. In other words we appear to be looking at the usual conflict between a popular culture, aiming for photorealism, and a high-brow culture which from a conceptual point of view is based on the art of programming and from an aesthetic point of view, on the cultured tradition of modernism. In actual fact few of the

artists who modify videogames would identify with this dichotomy. They are all inveterate gamers who entirely embrace the pop culture they work with, and their references to modern abstract art often contain a vein of typically postmodern irony. And this underlying ambiguity is what makes the art of the game patch so much more intriguing than much Software Art, which tends to barricade itself inside the usual unassailable ivory tower. Game Art brings us many examples of projects which aim to use the powerful engines present in videogames in different ways, to create abstract images. The series of variations on the theme of JODI, from *SOD*²¹ (which works on Wolfenstein 3D) to *Untitled Game*²² (using Quake) and Joan Leandre, who worked first with a classic car racing game (*retroyou R/C*²³) and then on a flight simulator (*nostalg*),²⁴ with results which range from the abstract to the surreal, are undisputed classics in the genre. The works in this book include one seminal project: *q3aPaint* by

the Australian artist Delire (Julian Oliver), where the bots of Quake III are used to paint informal pictures. As Lev Manovich comments: «Post-media aesthetics should adopt the new concepts, metaphors and operations of a computer and network era, such as information, data, interface, bandwidth, stream, storage, rip, compress etc.».²⁵ Following this paradigm we could say that *q3aPaint* is the visualization of a flow of purposefully altered data, just as *Unreal Art* by Alison Mealey is the visualization of a process, that process being a thirty minute session of Unreal Tournament; and *Rom Color* by Brent Gustafson is the mapping of all the data stored in a NES cartridge. In opposition to this, some artists happily accept the challenge of photorealism and the cultural contaminations that this generates. So we get Palle Torsson, for example, who had already observed the analogies between the virtual environments of videogames and certain forms of contemporary architecture, transferring the monsters of Duke

Nukem 3D into the ascetic space of a contemporary art gallery (*ars Doom*, from 1995). In his *Evil Interiors* (from 2003) he uses the graphic engine of Unreal Tournament 2003 to redesign a number of famous film sets. Then there is the English artist John Paul Bichard who photographs the interiors of the videogame Max Payne 2, transforming them into the settings for tragedies which though over leave clear traces on the walls, carpets and fire stairs.

Videogame Baroque

Between abstraction and photorealism there is a third way, which references the polygonal aesthetic of 3D videogames but seeks to subvert the tendency towards photorealism in various ways. Aside from the desire to explore new aesthetic avenues in the context of the experimental game design scene, that we have already examined, there are two interesting, popular sides to this. One

consists in infiltrating the reality of the 3D gamescene, such as the aforementioned *Velvet-Strike*, where pacifist graffiti is introduced into the scenery, with slogans like "Hostages of Military Fantasy", "War is funny" or "You are your most dangerous enemy". This has the contradictory aim of juxtaposing two aesthetics corresponding to two opposing ideologies, as well as making the game scenes appear more real and at the same time pointing them up as a medium and tool of military propaganda. Moreover the juxtaposition of reality and videogame fiction is one of the most characteristic stylistic traits of the so-called *digital folk art* which can be found on the net, produced by fans and amateurs who perceive the duality of the modern world and intuitively feel the need to render this in a single image. Nullsleep refers to this scene in his *New York Romscapes* (2004), and Brody Condon dedicated his *Fake Screenshot Contest* (2003) to it. It is a contamination perpetrated in a wide variety of ways, where reality (mediated,

obviously, through photography) is compared with the polygons of an FPS, or the pixel blocks of Zelda, or the geometrical patterns of Tetris, or the isometric vision of a strategy game. There is another side, which focuses on accentuating the imperfections and defects in the contemporary version of photorealism, highlighting the polygonal, isometric aesthetic of the gaming experience. Polygons, the limit to this form of realism held in check by processor capacity and band width, become a stylistic element, and isometry, «a technique which falsifies real proportions at the very moment it attempts to reproduce them with the greatest degree of realism»²⁶ is its means of expression. In this sense it is symbolized by the monument to *John Carmack* by Brody Condon, which with its six hundred and fifty polygons demonstrates how a technical limit can be transformed into an artistic feature.

Retro-Aesthetics

Here and there we have seen the illustrious ghosts of a pixellated, 2D past – Pong, Super Mario, and Space Invaders – emerge. This should come as no surprise: retrogaming is one of the most lively trends in videogame culture and the emergence of a retro aesthetic is the inevitable outcome. Almost all videogame artists and hackers grew up with these “primitive blips”²⁷ in their eyes: it was inevitable that sooner or later they should turn to their childhood. The focus on childhood is a constant in all modernist art and almost always, from Dadaism to Art Brut, springs from a revolutionary inspiration, from the desire to oppose the classic art forms of every era – from Western figurative art to the academic and neoclassical declinations of geometrical abstractions – by unleashing the unruly force of instinct, the irrational and unconscious. But Cory Arcangel and Brent Gustafson hacking into Nintendo cartridges, and

JODI’s work on Jet Set Willy represents much more than this. The old games and platforms are more than just the games of our childhood, they are simple, more elementary technologies which are much easier to manipulate. They are junk technology waiting for someone to give them a new life, to be of use or at least of interest once more, according to William Gibson’s definitive description in the article *Rocket Radio* (1989): «The Street finds its own uses for things – uses the manufacturers never imagined».²⁸ At the same time the artists are not merely nostalgic about the games of their childhood for their sentimental value or the revolutionary energy of their idiom – they also represent the consummate embodiment of what Fulvio Carmagnola has indicated as the ideal user of the new media society: the trickster. This trickster is «a conscious, cheating player who does not reject the rules of the media society and global commercialization on principle, but who, like a sort of *judoka* uses the power of language,

communications and commodities as a point of departure or lever for a reflective reconsideration of its meaning, turning it on its head. The practices of the trickster are a form of aesthetic behavior and taste based on the internal subversion of the commodities game. The ironic counterpart of aesthetic taste in the present day».²⁹ It would be difficult to provide a better definition of artists who move with ease between different worlds, reconstructing old technologies and subverting new ones, but above all playing – with symbols, code, tradition, and with the spectator: artists who are contributing to the definition of a new aesthetic paradigm. (English translation by Anna Carruthers)

Notes

- 1 In L. Manovich, *Info-Aesthetics Manifesto*, March 2001, available online at www.manovich.net/IA/index.html.
- 2 In L. Manovich, *Ivi*.
- 3 In L. Manovich, *Info-Aesthetics Summary*, October 2001, available online at www.manovich.net/IA/index.html.
- 4 In D. Hayward, “Videogame Aesthetics. The Future!”, 2005. Online at <http://modetwo.net/users/nachimir/vga/>.
- 5 J.D. Bolter, and R. Grusin, *Remediation. Understanding New Media*, The MIT Press, Cambridge, London 1999.
- 6 L. Manovich, *The Language of New Media*, The MIT Press 2001.
- 7 J.D. Bolter – R. Grusin, quoted.
- 8 In L. Manovich, *The Language of New Media*, quoted, p. 229.
- 9 In M. Manetas, *Copying from videogames, is the art of our days*, 2002-04, available online at www.manetas.com/txt/videogamesis.html.
- 10 See also E. Stern, “A Touch of Mediaeval: Narrative, Magic and Computer Technology in Massively Multiplayer Computer Role-Playing Games”, 2000-02, in F. Mayra, (ed.), *Computer Games and Digital Cultures Conference Proceedings*, Tampere University Press, Tampere 2002, available online at www.eddostern.com/texts/Stern_TOME.html.
- 11 In A.-M. Schleiner, “Game Plug-ins and Patches as Hacker Art”, in *Cracking the Maze*, curator’s note, 16 July 1999, available online at www.Opensorcery.net/note.html.
- 12 M. Bittanti, “The uber-pop gamescapes of Mauro Ceolin”, February 2004, in *netartreview*, www.netartreview.net/weeklyFeatures/ceolin.html.
- 13 www.escapefromwoomera.org/.
- 14 www.waco.c-level.cc/.
- 15 www.selectparks.net/acmipark.htm.
- 16 See D. Hayward, quoted.
- 17 D. Quaranta, “Il piacere del gioco vi salverà. Intervista a Tale of Tales”, in *Miss Marple*, January 2005, www.missmarple.it. English version in *A minima*, issue 10, 2005.
- 18 In T. Baumgärtel, “Modification, Abstraction, Socialization. On Some Aspects of Artistic Computer Games”, in *Media Art Net*, 2004, www.medienkunstnetz.de/themes/generative-tools/computer_games/.
- 19 In *The Language of New Media* Manovich, dis-

cussing the logic of databases, observes that videogames do not follow the logic of the database, but appear to be more algorithm-based. He then quotes Will Wright, the creator of The Sims: «Playing the game is a continuous loop between the user (viewing the outcomes and inputting decisions) and the computer (calculating outcomes and displaying them to the user). The user is trying to build a mental model of the computer model». According to Manovich, this is another example of “transcoding”, namely computer code being transformed into cultural code. See L. Manovich, *The Language of New Media*, quoted, pp. 277-78.

20 In D. Hayward, quoted.

21 <http://sod.jodi.org>.

22 www.untitledgame.org.

23 http://retroyou.org/retroyou_RC_full_radio-Control/.

24 <http://nostalg.org>.

25 In L. Manovich, *Post-media Aesthetics*, July 2001, available online at www.manovich.net/DOCS/Post_media_aesthetics1.doc.

26 M. Bittanti, “Cover Story”, in M. Bittanti, (ed.), *Gli strumenti del videogioco. Logiche, estetiche e (v)ideologie*, Costa & Nolan, Milano 2005, p.

287. Bittanti is talking about *Screenshots* by Jon Haddock.

27 This term was coined by J.C. Herz. See J.C. Herz, *Joystick Nation: How Videogames Ate Our Quarters, Won Our Hearts and Rewired Our Minds*, Little Brown 1997.

28 W. Gibson, "Rocket Radio", in *Rolling Stone*, June 1989.

29 F. Carmagnola, *Synopsis...*, quoted, p. 130.