

# From Asteroids to Architectoids

## Close Encounters between Architecture and Game Design

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### FUNDAMENTALS OF A MISUNDERSTANDING

The frequently assumed proximity between architectural spaces in reality and their virtual counterparts in video games is based on a misunderstanding. The architectural discourse, when it occasionally comes into contact with disciplines related to the development of virtual realities, notes that today's video games provide entire cities as fields of play! But how would these vast spatial entities have been designed if experts in architecture and urban planning were not involved?

The gaming industry, on the other hand, dedicates entire research departments to the development of its scenarios, which are based on examples from architecture and urban planning. These teams investigate the formal typologies of natural or culturally shaped landscapes, whether these environments would be suitable as scenarios for game actions, and how they could be authentically staged. The bounty of these expeditions into real space not only flows into internal production processes, but is even used as advertising for new game titles.<sup>1</sup> Such references prove how hyper-realistic visualizations with “exceptional graphical quality”<sup>2</sup> can be achieved with intensive technological effort. At the same time, the con-

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**1** | The game engine *CryEngine* by Crytech GmbH is known for its high degree of realism in visual presentations. For the introduction of the game *Crysis* (2007), juxtapositions were published comparing the visualizations of the game engine with original photographic models.

**2** | Manuel Lacoste, “Why developers choose CRYENGINE – Part 5” (March 5, 2019).

fessions of an internationally renowned game corporation reveal that it “sends teams out to capture the essence of a place”<sup>3</sup>: what matters is a perfect copy of real scenarios, including correctly depicted fauna and flora, credible reactions of NPCs<sup>4</sup>, and even convincing social customs and actions. The “shot on location” seal of quality from the film industry’s location scouting practices seems to be reflected in a similar search for legitimacy by some game productions, apparently looking for a similar label “based on real locations”.

However, these developments in both disciplines are based on fundamentally false assumptions. They are grounded on a selective and superficial discussion, which simply overlooks the thematic core of the other discipline. The architectural perspective neglects to even perceive the sets of rules that exist in games, and the strategic actions derived from them. This, however, would be the prerequisite for understanding the effect of typical design laws in game spaces. Only then would it be possible to reveal the relationship between functional conditions and spatial order in game spaces—a relationship that, by the way, is certainly architectural. Just as in urban planning or architectural design, general conditions shape the artificial spaces of game design: “game spaces represent a spatial expression of the set of rules”.<sup>5</sup>

The game industry’s unshakeable conviction that it can transpose the highly complex structures of real environments into virtual space is based on a comparably robust ignorance. Mutually constitutive conditions of physical, geographical, ecological, functional, historical, and cultural processes—which led to the current state of an artificially-shaped “real” environment—are necessarily skipped in games that appear realistic. The image of such games, therefore, results from a montage of selected, for-

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<https://www.cryengine.com/news/why-developers-choose-cryengine-part-5> (accessed July 7, 2019).

**3** | Dean Takahashi, “How Ubisoft visits real places to make its open-world games like *The Division*” (February 17, 2019) <https://venturebeat.com/2016/02/17/how-ubisoft-creates-open-worlds-in-games-like-the-division/> (accessed July 7, 2019).

**4** | NPC: non-player-character, or non-playable character.

**5** | Ulrich Götz, “Rules shape spaces – Spaces shape rules,” *Games and Rules. Game Mechanics for the “Magic Circle,”* eds. Beat Suter, Mela Kocher and René Bauer (Bielefeld: transcript, 2018), pp. 259–65.

mal fragments, which may be indebted to a composition of the real, but which cannot comprehend its inner effects and are only able to reproduce its exterior appearance. The disciplinary exchange between architecture and games currently remains purely superficial. The two fields only recognize and copy the outer shell of the other discipline, but do not understand the core.

## INTERACT WITH UTOPIA

In the history of computer games, magical moments have marked the decisive steps in which machines for calculation became stages of fantasy. Such a transformation happened, for example, when William Crowther created a narrative space for fantastic actions in *Colossal Cave Adventure* (1976), uniting the most contradictory worlds imaginable: namely, the worlds of mathematical machines and those of fictional storytelling. As the gaming industry developed over the following decades, this unexpected connection between advanced technology and the elemental human need for play and narration became one of the most powerful tools of utopian design.

In their attempts to penetrate the representation of utopias, Surrealist painting was well aware that depictions were not synonymous with what was depicted.<sup>6</sup> These remarks came from a time when the recipients of a work were still mostly in a passive position, while authors actively determined the process of creating an artifact. The development of virtual worlds reverses this clear allocation of roles; probably very few developers involved in the lengthy creation process of large game productions, with hundreds of other collaborators, have an overview of both the totality of creative and technical contexts of the final result as well as the internal laws of the original model in reality. The recipients, on the other hand, are called upon to engage with seemingly realistic virtual environments through the profound possibilities of intervention in design and use, as if this artificial environment actually had to trigger realistic actions. In games that depict architectural environments, players internalize virtual

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6 | See René Magritte, *La Trahison des images* (Oil on canvas, 60.33 cm x 81.12 cm, 1929) The subtitle of the painting entitled *The Treachery of Images* reads: "Ceci n'est pas une pipe" (this is not a pipe).

spatial orders and their utility patterns without the need for deeper understanding. A direct return of such game principles to real space is therefore impossible, since the player learns behaviors for virtual space that have no validity in reality.

Fig. 83: Exhibition “Cités Millénaires” at the Institut du Monde Arabe (Paris)<sup>7</sup>, Oct 10 2018 – Feb 10, 2019



However, the visual perfection of the realistic representations in some game worlds often makes it difficult to ascertain whether their fictionality originated in fantastic creations, or whether their source material is taken directly from reality. In order to adapt the animation of avatars to the motion sequences of their two-legged human role models, *motion capturing* transfers the complexity of human body movements to the computer. Parallel *facial capturing* complements these natural-looking movements with the transformation of faces. It seems to be only a matter of time—and comparatively simple technological developments—until the survey-

7 | See Arts in the City, “Voyage virtuel au coeur des cités millénaires . l’Institut du Monde Arabe” (October 16, 2018), <https://www.youtube.com/watch?v=0xPp9XoyuBM> (accessed July 7, 2019).

ing technologies used in architecture and urban development can deliver spatial data through three-dimensionally scanning drone flights, which can immediately become virtual scenes in games. The virtual realities of digital games offer unique opportunities to give visual expression to the creation and use of utopian designs. Therefore, the ever-more established design approach of aiming for the most correct possible representation of real space in the virtual, can only result in one judgment: in several respects, this approach is extremely annoying.

## VIRTUAL ARCHITECTOIDS

The aforementioned examples illustrate how strong the mutual attraction is between the design methods of real and virtual space. But the “flirtation” of these disciplines is not without consequences—for after mutual exchange, it creates chimeras. The interdisciplinary debate, which only takes place on the surface, imports the appearance, but not the essence, of the two neighboring subject areas. Architecture and urban development do not become more utopian or more playful through the contact with games, but prefer to use the possibilities of virtual reality technologies to impress potential investors. Concepts for games do not become more spatially well-devised or more architecturally sophisticated, but rather, content themselves with conceiving game actions that match the imitation of traffic infrastructure buildings—such that, for example, car chases can be played. The results of the exchange follow fixed, primarily visual platitudes; their objectives bind and waste creative resources. Admittedly, however, the results of photorealistic representations are so powerful and impressive that they become guiding images in the discussion of how space can even be depicted in the virtual at all. In both disciplines, a “third” thing arises from the use of functionless bits and pieces of the respective other discipline: if real constructions are called “architecture,” these results could instead be described as “architectoids”.<sup>8</sup>

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**8** | The term “architectoid” is used to describe an architect-in-training in the English language. There is no corresponding name for a spatial structure that is in the intermediate stage described.

Fig. 84: *Grand Theft Auto V*: Particularly realistic Appearance with *NaturalVision Mod*



The games industry spends billions on exploring the qualities of the virtual. But especially with the most elaborate productions, these efforts often lead to mere functionally-depleted images of reality. However, if the design of the real space corresponds to its functional conditions, the design of a game environment is linked to the concept of game mechanics and motivation<sup>9</sup> and artistic staging.<sup>10</sup> Therefore, the image of real spaces is not functionally useful for game design—at least at first. Instead, the benefit of realistic visualization for games has to be constructed at great expense. Paradoxically, for this reason, the architectural idea is never reduced more to a mere background than in realistically visualized game productions, which are not able to emulate architectural logics, *per se*: they only use their empty shells.

Game studios have long been aware of the hunger for realism their representations generate. On one hand, they know the criticism they will face with the smallest deviations from the real detail; on the other hand, they realize that the goal of creating perfect images within the framework of available budgets can only be achieved to a certain degree. As such, they have come up with a workaround: almost akin to the architectural concept of “participation,” large game productions set up interfaces through which fan projects, after the first release, work on how the visual impression can

**9** | René Bauer, “Games as a special zone,” in Suter, Kocher, Bauer 2018, pp. 259–265.

**10** | Stephan Schwingeler, *Die Raummaschine* (Boizenburg: Verlag Werner Hülsbusch, 2008), p. 103.

be further improved in order to become “as photorealistic as possible”<sup>11</sup>. Extensive community contributions expand and refine the visual appearance of games in what are called “mods”—modifications—and thus represent a thought-provoking attitude toward central questions of artistic and creative authorship.

These game productions organize their work for the visual plausibility of the supposedly real, and not for the qualities of the fictional in the virtual. The trend towards visual realism in games is not new, but it persists: “Games are no longer about using the freedom of virtual creative space to make the impossible possible, but are instead about making what is in reality improbable possible to experience”.<sup>12</sup> When such games are used, the “wear and tear effect” is already noticeable after a short time; this describes how a game action presents as very thin in comparison to graphic representation, and one becomes indifferent to the visual effects. This could hardly contradict the effort of the research more—all of which was necessary to create realistically coherent scenarios in the first place. It is precisely this contradiction that game critics find problematic when they point out a lack of contextualization in what is depicted”.<sup>13</sup>

Amazingly few game productions dedicate themselves to their own research on spatial qualities in the virtual. This statement even applies to productions that pursue visual abstraction and stylization, such as comic or fantasy styles. A remarkably small number of games play with the actual material of the virtual by, for example, questioning readability and patterns of use, presenting graphics with previously unseen imaging techniques, or designing spatial logics that make progress in a game space a challenge. However, when these rare experiments are made public, they often receive above-average recognition for their courage, such as *Memory*

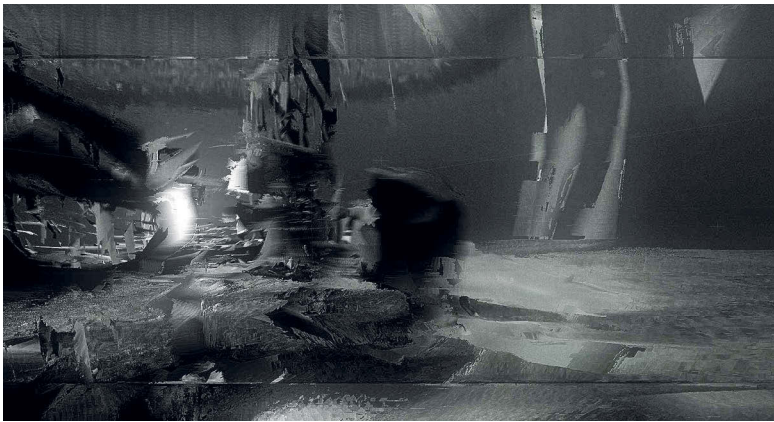
**11** | John Papadopoulos, “NaturalVision mod aims to make Grand Theft Auto V as photorealistic as possible,” (July 26, 2016), <https://www.dsogaming.com/news/naturalvision-mod-aims-to-make-grand-theft-auto-v-as-photorealistic-as-possible/> (accessed July 7, 2019).

**12** | Ulrich Götz, “Load and Support,” in *Space Time Play. Synergies Between Computer Games, Architecture and Urbanism*, eds. Matthias Böttger, Friedrich von Borries, Steffen P. Walz (Basel/Boston/Berlin: Birkhäuser, 2007), p.134–137.

**13** | Matthias Kreienbrink, “Viel Kulisse, nichts dahinter” (April 27, 2019), <https://www.zeit.de/digital/games/2019-04/the-division-2-videospiel-reality-erzaehlung/komplettansicht?print> (accessed July 7, 2019).

of *a Broken Dimension* (2017), *Portal* (2007), or *Portal 2* (2011). Usually, it is only particularly small groups of developers who tackle such projects (and who, after initial success, then merge into larger studios). It would be hard to imagine what visionary results could be achieved if large-scale productions opened themselves to such experiments, and the effort of their developments were to flow into the creation of truly fantastic worlds.

Fig. 85: *Memory of a Broken Dimension* (2017): Researching an Independent Quality of the Virtual



## THE SHELL OF A GHOST

The architecture of the twentieth century saw itself as a driving force for the renewal of society. Individual architects or groups of architects, as well as entire architectural trends, worked with this self-image to shift the boundaries of what could be possible. Frank Lloyd Wright's utopian contributions to this are legendary. In the *Gläserne Kette*,<sup>14</sup> Hans Scharoun anticipated iconic architectural visions that later culminated in the buildings of the Philharmonie (1963) and the Staatsbibliothek (1978) in Berlin. The Munich Olympic Stadium (1972)<sup>15</sup>, the Centre Pompidou in Paris (1977)<sup>16</sup>,

**14** | Die Gläserne Kette (1919-1920) was a group of architects and artists in Berlin, surrounding Bruno Taut, that discussed visionary forms of architecture.

**15** | Architects: Behnisch & Partner.

**16** | Architects: Renzo Piano and Richard Rogers.



or the projects of the architectural group Archigram<sup>17</sup> are representative of the established belief in progress that was inherent to twentieth-century architecture. Some architectural trends were devoted to social renewal through new forms of urban coexistence, others attempted to break the formal canon of the existing (for example, in deconstructivism). Where innovations were not pushed forward within their own discipline, excursions and contacts with other disciplines and media provided inspiration. Some positioned themselves at the intersection with art, such as Constant (1920-2005)<sup>18</sup>, who conceived previously unknown urban plans as part of the Situationists. The architectural discourse discussed philosophical views or even turned to comic film adaptations such as *Ghost in the Shell* (1989/1995), which provided material for architectural discussions about the effects of the digital revolution on society.<sup>19</sup>

As future-oriented as these approaches were in comparison to previous epochs, it is remarkable that they were created using highly traditional tools and methods of production. Visions were created with paper, ink, watercolor, and architectural models; their complexity made new tools—this time digital—possible and necessary. Such software tools for spatial planning in architecture and urban planning are available today, and they are closely related to the design methods used in virtual-world construction. In these reformed architectural design processes, a realistic portrayal of ideas appears to be the ultimate goal. The preliminary culmination of this architectural design approach is an alliance with game technologies, which allows virtual access to designs that have not yet been implemented by using virtual reality devices. In the resulting struggle for the coherence of a realistic aesthetic, what can be formally depicted becomes the focus of attention in an inflationary way, while the only vague narrative hint at the possibilities of action and use receives hardly any recognition. But it was precisely such methods that architectural visualization used only a few decades ago, when atmospheric sketches or model photographs intentionally generated ambiguous images to open up bold, epochal visions.

The use of new methods does not necessarily lead to reforms of their content. In an unholy analogy to video games, an open contradiction in

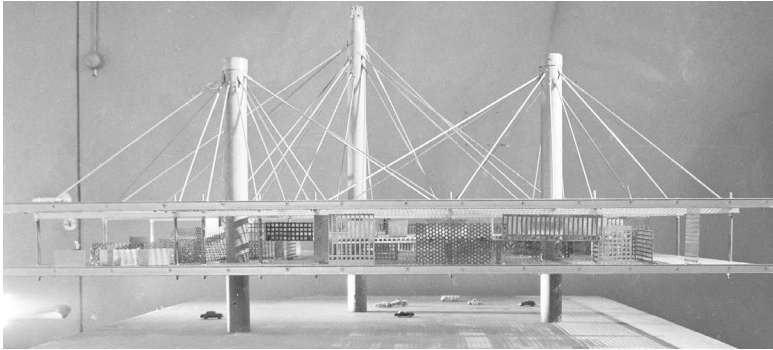
**17** | British group of architects (1960-1974).

**18** | Constant Nieuwenhuys, a Dutch Artist better known as Constant.

**19** | See Masamune Shirow, *Ghost in the Shell* (Kodansha: Tokyo, 1989); Mamoru Oshii, *Ghost in the Shell* (Production I.G., 1995).

the construction industry can be seen between the readily available design possibilities of new software tools and the results that are actually achieved. In the breadth of their application, these tools often seem to be more regressive than their predecessors—as if less imagination were used not only to read, but also to develop these designs. What remains are architectural platitudes, ghostly shells.

Fig. 86: Constant Nieuwenhuys, *New Babylon*, 1964



## FICTITIOUS NARRATION – DOGMATIC REALITY

Despite all displeasure with decorating virtual worlds with objects whose meaning lies in reality, there are also legitimate reasons for realistic design approaches. Why should a crime story, for example, not become the subject of a game—and is it not important, then, to choose a setting from reality? How should a horror game be told if tension is not constructed through references to reality?

Assessing the suitability of a visualization style must be evaluated on a differentiated basis. Some games lean closely on the traditions of cinema and film, and therefore continue the aesthetics of the camera. In their extension of the cinematic experience, these games openly commit themselves to the themes and perspectives of film production: the broken, small-town idyll of the horror game *The Last of Us* (2013) is told in cinematic form all the way through; the clear reference to classics from Western films is the central argument of *Red Dead Redemption* (2010). Using historical references, the multilayered *Fallout* series shows, in a post-apocalyptic setting, how the framing of the plot before and after the

nuclear catastrophe demand a realistic visual description. *Fallout 4* (2017) only permits a step-by-step exploration of the “open world,” in which players must set up their own bases in expeditions, in order to slowly occupy the virtual space and literally install themselves there.

These examples put narration at the center of the game, and plausibly explain why such stories must be sensibly located in realism. The consideration of the theme of the game, therefore, is a key with which the choice of visual presentation can be discussed. However, it also reveals the superficiality of games in which the plot is primarily governed by rules without any notable narrative depth—and which nevertheless make use of realistic modes of representation. The short, conflict-oriented rounds of *PlayerUnknown's Battlegrounds* (2017) are based exclusively on the principle of “last man standing,” in which the first rank in the competition is determined by eliminating all other opponents. But why should the resulting hide-and-seek game require a visualization in which the player hides a human-like avatar with a camouflage suit in virtual grass? Wouldn't an abstract, monochrome figure in front of a background of the same color result in the same gameplay according to this simple set of rules?

But not all decisive arguments for the development of games are derived exclusively from the actual game concept. This desirable approach is contradicted by the laws of a global gaming market worth billions. It is not only oriented toward the goals of innovative conception and design, but it also creates dependencies on investments, target groups, branding, profit maximization, and so forth. Looking for similarities in the most successful games, one notices what seems to be a mere formality: games with high sales numbers in the global mainstream market quite often use visualizations that show realistic (urban) environments, or convert such representations into easily recognizable comic styles (such as *Fortnite*, 2017).<sup>20</sup> Especially in the case of interactive objects, selected designs are found in very similar form both in titles with a high demand for realism as well as in comic-strip stylizations (this applies, for example, to buildings, furnishings, vehicles, and weapons, but also to movement behavior and

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**20** | See Technobezz, “20 Meistverkaufte Videospiele aller Zeiten” (May 27, 2019) <https://www.technobezz.de/best/20-best-selling-video-games-of-all-time/> (accessed July 7, 2019).

animation patterns<sup>21</sup>). These common design paradigms can be found in action, adventure, sports, fantasy, and role-playing games—and they extend far into the party and family games sector. The often opulently decorated worlds of these games can only be achieved with high production costs.

On the other hand, there are strategy, logic, and puzzle games, which rely on the persuasiveness of their game mechanics with abstract visual representations. The effects of their “game motivation” do not lag behind games with a high degree of realism, which is why they also successfully position themselves on the market. Since the production effort of such games is relatively low in comparison to extensive fantasy worlds, and they can be kept on the market for a long time through constant updates, their operators like to refer to them as “cash cows.”

This competition pushes productions with smaller budgets into niche positions, where they explore design possibilities that are unoccupied by the mainstream. Typically, they also switch to stylized forms of representation, because they cannot afford to spend a lot of money creating realistic worlds. However, they are much more experimental in their approach in order to come up with unique creative features.

Although the rankings of the most successful games are based on very inconsistent criteria, a rough equation can be made: high financial production costs tend to result in realistic visualization quality, while cheaper productions tend to be more experimental. Conversely, the realistic quality of the appearance is based on high financial production costs, while the experiment tends to emerge in a niche. In this way, a calibration of contents and their visualizations occur, which generates a powerful feedback loop. In this cycle, mainstream game users seem to be conditioned in such a way that the “return on investment” for particularly expensive productions can only be achieved with games that have typical content, and an appearance that is realistic or close to reality. The aforementioned formality actually becomes an internal characteristic that says a lot about the nature of such productions. Ultimately, there is a direct connection between mediated aesthetics and the laws of the globalized market.

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**21** | For example, compare the competing products *PlayerUnknown's Battlegrounds* (2017) and *Fortnite* (2017), which use very similar interaction objects for quite different visual styles.

The Danish film directors Lars von Trier and Thomas Vinterberg initiated a catalogue of regulations in *Dogma 95* (1995), which was intended to lead film art from formal restrictions back to cinematic authenticity.<sup>22</sup> This set of restraints were intended to guarantee the plausibility and authenticity of film material once again, as well as to fight against false themes and means of presentation. Games, as freefloating narration machines and utopia producers in the virtual world, are—in principle—among the most visionary media of all, and they limit themselves with the conventions of their visual presentation. A special “dogma” for this medium would therefore also have to demand a new authenticity, one that isolates the patterns in which trivial content arises. This includes the understanding that games should not automatically take culturally-shaped space that we know from architecture and urban planning as the setting for their events. Instead, they should rather turn their attention to researching the principles of game space.

## NEIGHBORS AT A FENCE

Hidden dependencies, misinterpretations and misunderstandings, but also creative lethargies define the image that the developers of real and virtual space—game designers and architects—have of one another. These two parties behave like neighbors at a fence, respecting each other and possessing established opinions about one another—but not exchanging their views. Sometimes, they secretly pick a fruit from a branch that grows over the fence—but of course, only when the other is not looking. Shouldn't there be a means for a more constructive dialogue? How could these two areas of expertise be better combined, and which of their counterparts' skills could the neighbors use more effectively?

The essence of architecture results from its innermost, functional demands. Architectural typologies are defined as frames, in order to integrate them into culturally-shaped space. Façades are shells that cover architectural content. Trained in analytical design, architects should be highly opposed to reducing games to constructs of the virtual on the

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**22** | With a commitment to the “Dogme 95 Manifesto,” film directors vowed to act according to the guidelines of the Dogme 95 collective, which came to an end in 2005.

surface, and failing to deal with their functionalities inside and outside the game. The architectural design must open itself to the narrative and utopian qualities of the virtual, instead of using its possibilities only for illustration with glossy renderings. Isn't it the highest honor for architectural design if it survives the times, and proves its independent qualities through ever-new stories that unfold inside it?

How could games approach architecture? The competition in their graphic output obscures the potential of a fantastic medium—to use the freedom of the virtual for games as a central cultural need. With regard to architecture: it is not the copying of buildings that takes game design further, but the analysis of architectural concepts. How does the small fit into the big picture, what structural principles are underlying, how can a construct be adapted and expanded, and what gesture is communicated to the outside world?

From the point of view of architecture, the call for game design must be: Have the courage to show the unfinished, turn games into islands in the virtual, which dissolve at their edges like drawings in a sketchbook! Put your work into the mechanical and functional nature of the game space, and not into the copy of real space! And game designers answer architects: Play games! But be selective and play them architecturally! For only a few games stand out from the crowd, truly facing the challenging, inspiring questions of game space.