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From bricks to pixels

Gabriele Aroni

Abstract

In a world dominated by an architecture that often fails to communicate to the public (Ibelings 1998: 88), or fails to communicate the right messages (Curl 2018: xxxi), and most importantly “deliberately avoids emotional engagement with its user” (Coates 2012: 11), digital games provide a rare imaginary space where architecture is communicative, and stirring emotions is one of its main purposes. Digital games are interactive by their own nature, and movement and space are their main characterizing elements. Through virtual spaces it is possible to establish a narration, tell a story and effect aesthetic impressions, other than to solely use them as elements of gameplay. This chapter will thus look at how digital games transmit emotions to players and how virtual architecture is a fundamental component in this process. This chapter will also investigate how the anticipation and expectation of future events can be as emotionally charged as their actual development, and how virtual architecture plays a crucial role in creating this “anticipatory play” (Upton 2015). Digital games are also composed of non-interactive or motionless parts which can be equally enjoyed by players and are equally significant emotionally. In other words, virtual architecture is a fundamental part in setting the tone and décor of a digital game, even without dialogues or characters, as demonstrated in games such as *Manifold Garden* (William Chyr Studio 2019) or *ECHO* (ULTRA ULTRA 2017), where the architectural environment alone is able to

communicate emotions to players. In this chapter, we shall examine these “static” architectural elements revealing to what extent they are major conveyors of emotions in digital games.

Keywords: architecture, digital games, virtual space, design, interactive media

13.1 Introduction

“La Construction, C’EST POUR FAIRE TENIR; l’Architecture, C’EST POUR ÉMOUVOIR¹” (1925: 9) wrote Swiss architect Le Corbusier, one of the fathers of modern architecture. That architecture, as in “the art of building”, is there to stir emotions and not just provide shelter or fulfill a function is a fact that we can easily guess from the variety of forms, colors and materials that we can witness in buildings, even when built in the same climate and for the same functions. How architecture manages to communicate and move, is a fact as evident as it is controversial. This chapter will explore this topic from the point of view of virtual architecture, i.e., the architecture present in digital games. The reason is as follows: we might argue that – at least many – buildings only fulfill a functional role, a feeling strengthened by modernist architecture – and onwards – and as such, their capability of instilling emotions in the viewers and users is accidental (Ibelings 1998: 88) if not completely absent (Coates 2012: 11). At the same time, architecture inevitably solicits emotions, regardless of the intentions of its designers, for even the most utilitarian factory and the most anonymous strip mall compel a reaction from their users, be it for their forms, colors, location, and use. Arguably, not all these emotions are positive, but are the negative emotions exclusively the results of collateral effects outside the scope of the designer? And is there any use in soliciting negative emotions with architecture? Digital games offer an imaginary space where, for its virtue of being virtual and for the sake of narrating stories, all kinds of emotions are to be elicited by their settings and environments. As such, they

constitute the perfect canvas to analyze the elements of architecture that solicit particular feelings, how they are used, and how they are “translated” from real architecture.

13.2 Emotions in architecture

Architect Leon Battista Alberti, in his treatise *De re aedificatoria*, written in the 1450s, points out how important it is for a building to be found beautiful by its occupants and onlookers.

He affirms that everyone, regardless of education or upbringing, is affected by how a building looks, and feels disgust in front of ugly and disproportionate architecture ([1485] 1989: 233–234). Centuries later, visionary French architect Etienne Louis Boullée stated that:

Our buildings, especially the public ones, should somehow be like poems. The images they offer to our senses should evoke in us feelings corresponding to the use they are dedicated to.

([1790] 2005: 3 [my translation])

Thus confirming how communicating feelings is indeed a fundamental part of architecture, and that these feelings should be appropriate for the function and location of the building.

How about negative feelings? Is there room for them in architecture, and how are they conveyed?

In the opinion of contemporary architect Peter Eisenman, the answer is yes, and he indeed stated, in a famous debate at Harvard University with colleague Christopher Alexander, that confusion and disharmony are part of the “cosmology that we exist in” and the role of art and architecture is to “remind people that everything wasn’t all right” (Eisenman & Alexander 1983). In Eisenman’s opinion then, the role of the architect is to communicate the negativity present in society, rather than attempt to fix it. Architecture can thus transmit negative emotions, not just as a byproduct of external actions, such as destruction or neglect, but rather as a deliberate choice from its designer. How is this accomplished? It is obvious that a city in ruins, or an abandoned, poorly lit alley will not

provide us with any happy feelings, but how can the same effect be accomplished through architectural forms?

Mathematician Nikos Salingaros affirms that:

A building's exterior and interior surfaces either "connect" in an emotionally positive manner with the user; remain neutral by having no effect; or act in a negative fashion so as to repel.

This interaction resides in the information content of space and the transitions from one region to another, and is independent of cultural bias. (2013: 99)

We perceive architecture as an expression of the natural law of gravitation (Crook 2003), and we expect it to be designed following the behavior we see naturally every day on any object. If we perceive potentially unstable forms, it generates discomfort (Curl 2018: xxxiv). For instance, following the fact that the force of gravity operates downwards, we are physiologically accustomed to forms structured predominately vertically, rather than horizontally (2018: 13). Salingaros affirms that our brains evolved to seek information in the environment, and we become distressed in the absence of visual information, or when "the information present is unstructured" (2013: 100). Plain, featureless surfaces, lack of visual stimuli or unpleasant ones lead to depression and stress, generating negative emotions (2013: 188). If the built environment communicates via a series of broken patterns and forms, we cannot relate to it and that generates a sense of anxiety. According to Salingaros, an environment built in such a way – which in his opinion is the modernist one present in most of our urban and suburban environments – leads to effects similar to carbon monoxide poisoning, cerebral lesions due to strokes and to the pathology of visual agnosia, a condition where "a person perceives detail but cannot integrate this information to recognize an overall form" (2013: 111). Being unable to recognize patterns in the built environment is the same as not being able to recognize objects or faces, and as such, humans instinctively react by feeling lost.

13.3 Emotions in digital games

As might seem obvious, emotions in digital games are analyzed mostly in relation to their interactivity and nature as games (Isbister 2016; Järvinen 2009). However, due to their nature as video games, the visual component is all but to be overlooked. Scholar Anabel Aubrey argues that

approaches to video game analysis that privilege mechanics and code (as the “proper” domain of programming) over images, characters, and story (rendered as secondary to the action) have the effect of foreclosing other types of analyses, and other types of players, games, and reasons for playing, that might differently attune us to how games make meaning across bodies and code. (2018: 2)

In this regard, we are going to inquire to what extent and how the visual aspect of digital games environments elicits emotions. Moreover, architecture also influences how a game is played and interacted upon, and not just how it looks, bringing an additional layer of analysis.

Gustavo Fortes Tondello *et al.* (2018) conducted a vast study with more than 50,000 participants in order to derive a trait model of digital game players and what they seek in games. As outlined in previous studies (Nacke, Bateman & Mandryk 2014; Bateman 2014) players are attracted to games for several reasons, and not only winning or beating the game, but aspects such as the social interaction with other players or the immersion in a fantasy world can be as important as the challenge and the competition. Fortes Tondello *et al.*'s study delineated three main player orientation traits: action, aesthetic, and goal. Aesthetic experiences are thus part of what some players are interested in, and that includes visual experiences related to the environment.

Petri Lankoski (2012) argues that emotions in computer games arise mostly from their relationship with the game goals. The more an action, or a scene displayed on screen brings players close to the goal of the game, the more it brings positive emotions. Conversely, actions and scenes influencing negatively the outcome for players will elicit negative emotions. All this with little relation to what is actually visible on screen, i.e. what actually

happens in the game, if a positive, or negative event. In Lankoski's opinion, players are not scared of, say, monsters in a game because they are monsters, but rather because their presence is usually a threat to them successfully completing the tasks outlined in the game. However, he states that the beauty of the environment in games can be a source of happiness in itself, and as such players can be motivated by this positive emotion to explore and enjoy the game environment regardless of its contribution to the reaching of a goal (2012: 50). Jonathan Frome (2019), in fact, argues that aesthetic emotions in games do not derive only from the relationship between their actions and gameplay:

For example, in *The Legend of Zelda: Breath of the Wild* (Nintendo, 2017; hereafter *Breath of the Wild*), players can choose to change the color of their horse's mane with no effect on gameplay. Players appraise the outcome of their color choice according to whether their actions helped them meet their aesthetic goals, not their game goals. A narrative frame implies appraisal criteria relating to whether a situation is good or bad for the characters in the story (including, potentially, the player's character). Consider a highly narrative game such as the point-and-click adventure *Grim Fandango* (LucasArts, 1998). The player may feel sympathy for the player character when the character's boss criticizes his job performance. Such sympathy is based on an appraisal of the situation in terms of the character's fictional mental states, not the player's game goals. (2019: 866)

Players thus relate emotionally with the game environment, its characters, story and visual aspect, other than its gameplay and interaction. It is not by accident that so much artistry and expense is devoted to the visual aspect in games. Grant Tavinor, discussing the aesthetics of digital games affirms that “[o]rientating this discussion around the graphical depiction of game worlds seems inescapable given the prominence of visual qualities in videogaming” (2009: 61) and that games “have perceptual and formal structures that are the object of an aesthetic and interpretive engagement in much the same way as other artworks” (2009: 174). He concludes that players have aesthetic interests comparable to traditional art appreciators. We can thus easily conflate the effects of architectural design in the real world with the ones

in digital games. Moreover, digital games, at least in the past 20 or so years, have offered complete three-dimensional environments, which means that we can – in most cases – explore and look at them as we would do in real life: we can walk along a street and raise our eyes to look at the buildings around us, or look down a precipice. All this on a bidimensional monitor – even though recent virtual reality headsets added the perception of depth, but this is just an additional factor – and the effect is nevertheless the closest experience we have to visiting actual places.

13.4 Architecture in digital games

Architecture plays an important affective role in digital games (Bonner 2014; Zonaga & Carter 2019). It helps not just to construct the environment within which players move, but also to set the mood and communicate information about the story and the world where the game is set. As much as real architecture, that is created for more than just mere shelter, digital game spaces are created not just to be used, but also to elicit emotions. At the same time, architecture in digital games is experienced mostly through playing the game, and as such this aspect and its relation to how architecture is designed is not to be ignored. This varies also from game to game, and from one game genre to the other. For instance, let us take the example of a vent: a rather mundane fixture which is usually given little thought, but that depending on the settings can influence the gameplay and by consequence how players perceive it. In *Alien: Isolation* (Creative Assembly 2014), a horror game based on the popular movie franchise *Alien*, players are pitted against an unkillable alien creature against which they are defenseless. The titular alien moves through the air duct of the space station, and as such players must be wary of them, as they signal that there is a possible danger. Air ducts thus induce anxiety and fear, not as much because of what they are, but because of what they imply within the game world. Conversely, in the digital game *Deus Ex: Mankind Divided* (Eidos Montreal 2016), a cyberpunk role-playing game, players can approach the various

quests with freedom, including freedom of movement and acting stealthily. Air vents are thus seen as opportunities, since players can enter them and use air ducts as hidden paths to reach their objective, or as hiding places from pursuing enemies.

Architecture elicits emotions based also on the context and the situation. Henri Lefebvre (1991 [1974]: 161) noted that we can apply Roland Barthes' five codes (1974 [1970]) to architectural spaces and to how we "read" the space around us. Among these codes there is the cultural code, whereby visitors to a place recollect information they might know about said place and the buildings it is composed of: stories they might have read about them, pictures they have already seen, etc. Practically everybody is able to recognize a church or a stadium, since we already have information about how they look. A specific church or specific stadium might bring an additional layer of information. For instance, the basilica of Sant' Andrea della Valle in Rome is a church, but it is also the setting of Puccini's *Tosca*, and as such might evoke additional or different feelings from onlookers, or it might be the church where one got married, having thus a personal relationship with it. There is also the proairetic code whereby visitors know, or guess, the function and the *raison d'être* of buildings. Even without knowing that it was an amphitheater used to host events, one can easily infer that the Coliseum was a structure designed to host a large number of people to observe something going on in the center, and given its size it was clearly of some importance. The same applies to digital games, for it is indeed rare that players interact with an architecture without finding themselves in a particular situation. Normally, players do not stroll around digital game environments as tourists or commuters would – although it can be done (Bittanti 2006) – indeed, their relationship with the environment is usually tied to the setting, story and actions related to the game. In a first-person shooter, interactions are usually limited to, as the name suggests, shooting enemies, so the architectural environment will be treated as a battlefield, players will look for cover, vantage points and potential enemy hideouts. In a stealth game,

the objective is to traverse the environment undetected, so players will search for dark paths and hidden passages, avoiding open and busy areas.

Scholar and former level designer Brian Upton, who worked on several important digital games, defines the experience of anticipating events in games as “anticipatory play”. In his opinion, the expectation of events in digital games is as important as the interaction, and much of it is expressed through architectural design:

For example, if you are playing a shooter, a blank corridor is less exciting than a corridor with an open door on one side, even if there are no enemies beyond the door. The anticipatory chain triggered by the open door (“Is there an ambush ahead? I have to move carefully. I can’t see anything. Can I peek around the corner?”) is an interesting experience even though the play is taking place entirely inside your head. (2015: 78)

Architecture in digital games is also used as a device to convey additional information about the world the player is in and the story. This particularly holds true for digital games set in real historical epochs. In this case the architectural *mise-en-scène* defines where the game is set both geographically and historically: “[s]pace determines what historical narratives the game can support by structuring what can be done by players and by functioning as a means of storytelling for developers” (Chapman 2016: 1.620). Chapman defines digital games set in real historical places where players can move around in relative freedom as “narrative gardens”, where “the role of space in the historical narrative is more heavily oriented towards embedding information” (2016: 1.622). In what is usually defined as “open-world games” players are able to roam around the game space freely, travelling within the streets of a city or even larger environments without the specific constraints of game objectives. For instance, the series of games *Assassin’s Creed* (Ubisoft 2007–2020) has made the possibility of exploring real historical locations one of its main game and selling points. Players are transported in a different place and time period in each game, where they can freely explore a city or region, from the Renaissance Italy of *Assassin’s Creed II* (Ubisoft 2009) to the

Ptolemaic Egypt of Assassin's Creed Origins (Ubisoft 2017). Architecture here is a fundamental backdrop for the game, as it is part of the narrative element, and it is at the same time the protagonist of the games. The architectural reconstruction was met with such acclaim that Ubisoft, the developers of Assassin's Creed, released free versions of Assassin's Creed Origins and Assassin's Creed Odyssey (2018) called Discovery Tours that allowed players to explore the games without the "game" component, and only admire the architectural reconstructions of cities and sites in ancient Egypt and Greece while following guided tours with explanations. It is not a case of happenstance that many of the most successful digital games are rich in cultural heritage representations (Coppstone 2017), and architecture is one of the main vectors of representation for cultural heritage.

13.5 Real and virtual architecture

Digital games use references to real world architecture and its elements in order to support the story and communicate to players. ECHO (ULTRA ULTRA 2017) is a science fiction adventure game set in the distant future, where we have to explore and survive a planet-wide palace filled with hostile clones of our very character. The game is inspired by Jorge Luis Borges' *The Library of Babel*, a short story in which the Argentine author envisioned an infinite library containing all the books of a certain length made of every possible combination of a certain character set. ECHO draws from The Library of Babel not so much in terms of themes, but rather of architecture, featuring the idea of a practically infinite man-made architectural construct constituted of repeating patterns. This choice also follows the aesthetic and emotional themes that the developers wanted to convey:

The palace aesthetic tabs into many aspects of the game, both from a narrative and thematic perspective. I don't want to give too much away by going into the culture that created the structure, but let's just say it reflects their arrogant worldview. Hopefully the environments also convey a sense of having entered some kind of afterlife, one containing both the elevated and the outcast. Thematically, the repetition and symmetry of ornamentations found in real

world palaces like Versailles and the Winter Palace just fit perfectly in a game called Echo, where you play against replications. (Couture 2018)

Interestingly, the feeling is conveyed through an architectural design that is not necessarily hostile itself. However, elements are used in a way that it does appear as something not entirely humane, and thus unsettling. Firstly, the scale. The rooms are humongous; you can see corridors and colonnades going as far as the eye can see. Secondly, the disposition. This is done in order to fulfill the needs of the game, but there is no clear use for the enormous rooms we visit, there is plenty of furniture such as tables and chairs, an inordinate number actually, but nobody to use them. Thirdly, as mentioned, the repetition, that gives the idea that the massive construction was created by machines by repeating a pattern – which is, incidentally, what is actually done by the developers to create the game environments – almost outside of human control and needs.

Using the disposition of seemingly “normal” architecture to create uneasiness is nothing new. Indeed, Michelangelo himself used a similar technique in the anteroom of the Laurentian Library in Florence in the first half of the sixteenth century, the place where, in the words of his contemporary Vasari, he “broke the bonds and chains of the things [of architecture]”² ([1568] 1997, vol. II: 740). Architectural historian Rudolf Wittkower explains that: “[i]n no architecture, however, has the idea of conflict been carried through in so new and individual a manner, and with such relentless consistency as in the anteroom of the Laurenziana. Michelangelo has submitted the whole building, in general as in detail, to the idea of conflict” (1934: 213). The anteroom is the space that physically connects the library to the outside world, and figuratively the space that transitions from the chaos of the mundane life to the order of knowledge in the library. To achieve the effect of a “purgatorial” space between chaos and order, Michelangelo subverted the usual classical architectural and structural rules to present visitors with a strange, while not completely alien, spectacle. In classical architecture, every elements has its own place, usually rooted in structural or

symbolic meaning, and Michelangelo wittingly scrambled them to present an uncanny view: the columns, that should usually support the whole structure, are instead plunged inside the wall, making it seem as if the wall itself was expanding towards the interior, swallowing it. The niches are empty, the Corinthian capitals are missing their usual decorative leaves, and abnormally large consoles are placed vertically, rather than horizontally, at the bottom rather than at the top. The large staircase, which takes much of the floor space, has a plastic form, as if it were made of malleable material rather than stable, solid limestone.

13.6 The fractal connection

Artist William Chyr recently developed a game completely based on environmental puzzles that players have to solve by moving around the dazzling architecture of the game, called *Manifold Garden* (William Chyr Studio 2019). Players can manipulate gravity at will, and the space is based on a three-torus, a four-dimensional space where all directions are connected, and for example jumping down in the void will have players, and objects, falling down from the top in an infinite cycle. Naturally, the architectural design of the game has to allow such gameplay, but of course it is not limited to that:

While architecture forms an essential part of *Manifold Garden*'s gameplay, Chyr tells me it is also key to the game's overall story. "I do have a narrative arc, and the only way it's conveyed to the player is through the architecture and the mechanics", Chyr explains, touching on how the game will – at least on one level – work as a metaphor for the past 400 years of physics. "You start off by learning how gravity works, and then by the end you're piecing together the shape of the universe", he adds. (McMullan 2016)

Chyr was inspired by several architects in his designs, from Frank Lloyd Wright to Tadao Ando. Given the gravity-bending mechanics, all structures need to be designed with exclusively 90-degree angles, and as such the aforementioned architects were an appropriate choice gameplaywise. The fractal details of Frank Lloyd Wright's architecture are a fitting design for a world that repeats itself ad infinitum in every direction, but this is not the only

effect that fractal images have on our minds. A fractal is a pattern that repeats itself at various scales and levels of magnifications, all based on the same basic structures (Lauwerier 1991). In Salingaros' opinion, fractals are necessary in architectural design as they connect various levels of scale, either through forms or other qualities, and create hierarchical linking. This helps the observer to link the various parts of the built environment together (2013: 175). This system mimics how our brain and mind are organized, down to the neural processes (Alexander & Globus 1996) and by using it in architecture, it can have a strong emotional impact:

Associative memory is very important to architectural design. It can be responsible for powerful emotional experiences when we identify with what we already know, or which reminds us of something stored in our memory. In response to a small cue, which can be as trivial as a particular ornament, a color, or a fleeting odor, we selectively retrieve a specific set of linked memories quickly. (Salingaros 2013: 178)

Salingaros argues that our bodies and brains are “tuned” to recognize fractal hierarchies and that these organizations have an emotive value for us because we attribute meaning to them. Conversely, non-fractal systems, such as bare, plain surfaces, bear no meaning and no – or negative – emotions. Thus, people naturally try to build in a way so that we can connect to the built environment, and the same holds true for digital games, if that is the effect the designer wants to achieve. Salingaros brings forth the example of cathedrals: complex but organized structures. Since we cannot connect to environments that are too simple or too chaotic, we organize complexity in a way that enables us to connect to the physical environment (2013: 183). William Chyr does the same in the levels of *Manifold Garden*, and in fact he takes inspiration from architectural designs that are fractal in nature, such as the Chand Bahori in Rajasthan, India, a ninth-century stepwell composed of dozens of symmetrical stairs on three sides (Chyr 2019), which inspired one of the iconic locations in the game. Moreover, many of the game's central puzzles draw inspiration from Ecclesiastical

architecture. Cathedrals, temples, and monasteries possess a sense of emotional weight that punctuates *Manifold Garden*'s most important moments (2019).

The visual connection between the importance of a piece of architecture in the game is in fact obvious, even without understanding the reference to real architecture and knowing the intention of the designer beforehand. *Manifold Garden* in fact lacks any kind of traditional storytelling; there are no characters, dialogues or written elements that tell players what to do or where to go, or even where they are. The only link between players and the world they are exploring is the architecture and the music. At the same time, even without any traditional storytelling methods, *Manifold Garden* manages to be a deeply impressive game thanks to its visual and dazzling spaces.

The same techniques can be employed in the reverse, in order to evoke a sense of dread in players. We mentioned French architect Etienne Louis Boullée before in this chapter, and how he affirmed that buildings must evoke an emotional connection with the users based on the purpose they are built for. In his projects, he ventured in the design of sepulchers; his most famous work is in fact the *Cénotaphe de Newton* (1784), an enormous empty sphere sitting atop a pedestal. In Boullée's opinion, "in order to produce sad and dark images, as I tried to do with funerary monuments, we need to present the skeleton of architecture as an imposing wall, completely bare"³ (2005 [1790]: 33). We can read here similar words to the ones of *Salingaros*, where the absence of details and features evokes negative emotions in the viewer. Boullée continues:

I find it impossible to conceive something sadder than a monument consisting of a smooth, bare and plain surface, made with a light-absorbing material, completely devoid of details and whose decoration is an assemblage of shadows delineated by even darker shadows.⁴ (2005 [1790]: 89)

The digital game *NaissanceE* (Limasse Five 2014) makes use of this principle in the design of its stark and foreboding environments. Similarly to *Manifold Garden*, *NaissanceE* uses its

environments to tell its story and communicate to players, without using characters, dialogues or texts, and has been in fact an inspiration for William Chyr in the development of his game. The author of NaissanceE, independent developer Mavros Sedeño, affirmed that “I just wanted the architecture to express the feeling you need to feel, in this place” (2017: 95). It is in fact architecture that carries on the game. The environments in NaissanceE are like Boullée’s sepulchers: enormous and bare, inspired by the works of Japanese mangaka Tustomu Nihei. Traversing these spaces takes noticeably longer than in normal games, where moving between points is always interrupted by some kind of action so as not to bore players, and allows players to calmly take in the vastness of this inhuman architecture:

NaissanceE uses simple texture-less shapes combined in such a way that leads to rich and complex environments. This paradoxical association creates an unusual visual style helping to give this world its particular mood. In addition, the almost colorless ambiance re-enforces the feeling of desolation and abandonment the player experiences when exploring the endless gigantic structures of NaissanceE. (Sedeño 2014)

NaissanceE architecture is for the most part abstract and rather removed from real architecture, but in general less so than Manifold Garden’s. In fact, the architectural design changes as the game progresses, and alternates parts composed exclusively of geometrical objects without an apparent function aside from allowing players to progress in the game, to environments where we can recognize familiar architectural structures. This is a deliberate choice on the part of the designer, as explained by Sedeño:

the reason I used some recognizable shapes and places, but also very unusual spaces, was to get a good mix between the symbolic and the abstract. And so to let the personal experience of the player make the experience of the game. Depending on your references in games, art, and architecture, and in life in general, you have a different experience. (2017: 102)

NaissanceE is a very open game in terms of how players interpret its story and meaning, but the dichotomy between recognizable, “human” architecture and abstract geometric constructs is evident throughout the game. In NaissanceE everything is artificial, it is not known if man-

made or otherwise, and there are no natural elements in the whole game, save for a brief moment. Order and chaos are thus expressed through architectural design: recognizable doors, windows and stairs give us a sense of understanding, whereas the stark, clean, pure, cyclopean geometrical forms are completely alien to us and evoke a feeling of being unnatural and inhuman.

13.7 Conclusions

That architecture and the environment around us are capable of evoking emotion is quite obvious, what is less obvious is how it is done from a design standpoint. As we have seen, there is a deep link between our minds and the shapes and forms of the buildings that surround us. Structures that go against our innate understanding of the world, such as gravity, and forms devoid of meaning and organization will instill a sense of uneasiness in any onlooker, whereas orderly and organized forms will put us at ease. Unlike real architecture, virtual architecture in digital games finds itself tasked also in creating environments that are supposed to evoke a sense of dread – even though this unfortunately happens all too often in real architecture as well! – and as such the understanding of how these mechanisms work is indeed essential. It is important from a game design point of view, as it helps game creators develop their ideas in the right direction, but it can be helpful for real architects as well, as games provide an imaginary space where players can experience architecture in a way that is similar to the real world. Whether made of bricks or pixels, architecture elicits a variety of emotions, wittingly or unwittingly. Architect and painter Massimo Scolari, famous for his capricci, paintings of imaginary architectures, affirms that they “are not the projects of what he wants the world to look like” (Krier 2016: 192), but, may we add, through emotions they can enable us to question the built world we live in.

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¹ The purpose of Construction is TO MAKE THINGS HOLD TOGETHER; of Architecture, TO MOVE US.

² rotto i lacci e le catene delle cose.

³ per produrre immagini tristi e oscure, bisogna, come ho cercato di fare nei monumenti funerari, presentare lo scheletro dell'architettura come una muratura imponente, assolutamente nuda.

⁴ Mi sembra impossibile concepire qualcosa di più triste di un monumento composto da una superficie piana, nuda e spoglia, fatta di una materia che assorba la luce, assolutamente priva di dettagli e la cui decorazione è costituita da un insieme di ombre tracciato per mezzo di ombre ancora più scure.