Animation vs. Simulation

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Abstract: *In his book "Cinema as an Art", Rudolf Arnheim states that cinema (art) cannot achieve to realize the mechanical reproduction of the real (nature) because of technical limitations but also states that these limitations are compulsory for the production of art. According to Arnheim, these limitations cause artists to interpret the real (nature) and to materialize impressive expressions. Architecture presents its productions to its viewers (customers) using some kind of media, before materializing them in the physical world. The most common ones nowadays are technical drawings (perspectives), models, photographs and computer aided models and animations. The architect makes impressive expressions based on the technical limitations of the medium he/she uses. With the computer technology, simulation gives possibilities to the architect for presenting and experiencing his/her art very close to reality. Simulation is the best way to reproduce the reality mechanically, when it is compared to other mediums. In this study, simulation's potential as an architectural presentation technique is examined through Arnheim's vision and Rembrandt's painting "Staalmeesters".*

Keywords: *Simulation; animation; architectural presentation; interactivity.*

Arnheim's vision of art

In the first part of his book *"Film as Art"* which was written in 1933 and debated cinema as art, Rudolf Arnheim focuses on the *two-dimensionality* and the *three-dimensionality* (stereoscopic film) in cinema. Arnheim says: *"It is one of the most important formal features of the cinema to appear for every object that is produced again in totally different shapes - means two-dimensionality and three-dimensionality - and to fulfill two different functions for the same object… In a stereoscopic image, setting different objects as if they are related to each other cannot be more effective than it is in real life. It seems coincidental and unimportant* when the definite parts of various objects are closed by other objects which get in front of them. To tell the truth, in a stereoscopic image, the location of the camera is not really considered important… but if there is not a profundity impression, the perspective becomes attractive and effective. What is seen, what is hidden only draws attention when it is arranged in accordance with the aim; the person is forced to understand why the objects are arranged in that way rather than in another way… Thus, as there is no depth, it adds a pleasant component that is out of reality to the image of the film. The formal qualities like the objects that are overlapped in a compositional and connotational form draws the attention of the audience. If the impression*

of extent is powerful, the shot in which the girl's face that is mentioned above is closed with the head of the man's dark silhouette, would not be that effective." (Arnheim, 2002)

By the help of these lines, Arnheim aims to contribute on the way to prove that cinema is an art, to the debate whether cinema is an art or a, then new, mechanical production of reality. According to Arnheim, as cinema materializes in a certain frame and as it has a two-dimensional aspect and limitations such as being black-white and quiet (without sound), it cannot be considered as the mechanical reproduction of reality. On the contrary, these limitations, like it is in the other fields of art, are important *unrealities* that make cinema an art and which the artist is tired of working on, besides, which help the artist to produce an effective narrative. Of course, from Arnheim's perspective, the effectiveness of an art work refers to the artist's compositional ability (on any medium) to put across his/her *message* to the audience.

The debate on the *two-dimensionality* and *three-dimensionality* in cinema is also important for architecture, which has new possibilities of presentation by the help of the computer support in recent years. Even though, the technique of stereoscopic film, on which it is started to work new, during the years Arnheim wrote these lines, was seemed to lose its short-term popularity during 1970's and to lose its importance for the art of cinema in 1980's and thrown out of debate (most probably Arnheim welcome that with happiness), the architecture that is supported with computer, fall in the middle of the debate. However Arnheim mentions stereoscopic film as *the mechanical reproduction of reality*, it cannot be said that this technique wholly imitates the three-dimensional comprehension in real life. Perhaps the new popularity of stereoscopic film in 2000's can be explained with that postulate. In other words, as stereoscopic film is not a mechanical reproduction of reality, it has certain limitations to produce an effective narrative. On the other hand, the architectural designs which are not yet materialized in the physical world, are realized to a certain extent by computers and experienced in an imaginary environment by the help of simulations.

Architectural presentation techniques and simulation

When the history of architecture is observed, it is utterable in terms that the architect uses the technique of presentation efficaciously and he/she presents the space (or the design), in the most effective way for his/her audience. In that type of usage, the presentation always includes a message. For example, with watercolor perspectives, photographs or computer based 3D models, the architect put across the message that his design is plastically beautiful and has a comfort to live in and also with diestocks, he/she informs about the dimensions and the materials that he/she uses. The architect presents his/her own point of view and the direction of his/her own choices, so in any presentation, the colors, proportions, graphical narrative of the presentation or the presented space are arranged in the most effective way by him/her. In a more brief expression: The place is quoted by using an artistic narrative over the borders of the presentation technique. In these presentations the viewer's choices are not important, the viewer accepts what is presented to him/her and makes his/her evaluation over that presentation.

By thinking over Arnhem's views that are mentioned above, and are acceptable for all other fields of art, we can reach to an opinion: The architect, in the presentation techniques that he/she has used until now, has reached the artistic narrative instead of the mechanical reproduction of reality (that is planned) by using the limitations, skillfully that the technique submits (scale modal, technical drawing, photography, colorful painting).

It is the same with the *animations* that are done with the support of computer. In their book *Cyberspace Lexicon* Bob Cotton and Richard Oliver defined animation as *"illusion of seamless movement produced by continuous projection of transparent images".*

(Cotton and Oliver, 1994) With the words *transparent images* Cotton and Oliver mean cartoon animation. But with the help of computers, the word *transparent* can be erased from the definition. Now, the word *animation* is understood as computer based presentation where the place is *three-dimensional* (professedly) thanks to the moving image. Basically here, again, the choices of the architect (or the person who prepared the presentation - artist) is important and the still image has *two-dimensions*. From that point of view, animation stands where cinema's and architecture's ways intersect. The architect, who tries to present the place in the most effective way like in his/her plates/diestocks and technical drawings, benefits from the cinema's narrative techniques of place and tries to affect his/her audience. In brief, he/she materializes on artistic narrative by using cinema.

On the other hand, it is totally different for the *simulations* (or visual simulations) that help the place to be experienced in an imaginary environment. In Britannica simulation is defined as *"research or teaching technique that reproduces actual events and processes under test conditions"* (http://www.britannica.com: July 2009) and in Wikipedia, *"simulation is the imitation of some real thing, state of affairs, or process"*. (http://en.wikipedia.org/wiki/simulation: July 2009) In this paper, the word *simulation* is used to present computer based visual simulations of spaces that help viewer (user) to walk around in his/her own path. In other words, a simulation has interactive 3D navigation in virtual spaces. Furthermore, with certain modules, user has a chance to change any part of space he/she wants. So to say in *simulation* the architect cannot present the place to his/her viewer as he/she wants, like he/she does in *animation* or in other presentations. In place the viewer may have a trip outside the architect's choices, may reject the illumination that is based on the architect's choices and may enlighten the place as he/she wants. The colors, in place, also, do not depend on the architect's choices, anymore. He/she may paint the place that the architect has designed as white to different colors; even he/she may have changes, which affects the design in the place. What is more important is that there are *no limitations like two-dimensionality*, the image without depth and –on account of that– the effective artistic narrative that Arnheim mentioned and that transforms cinema into art.

When the viewer stands outside of the borders that are presented to him/her and becomes independent of what is presented to him/her, in a better statement, of the one's choices who prepares the presentation, it brings about the cooperation on the work (in a more modern expression: *the interactivity*). The audience inside the presentation may alter the presented thing as he/she wants.

So this is the starting point of the tension between animation (or the presentation techniques which have limitations to build a mechanical reproduction of reality) and simulation: while in animation, the presentation is regarded as *finished* and *unquestionable*, it is *unfinished* and *changeable* in simulation. *Simulation* brings forward the important questions about the presentation of the *place*. Did the architect, while he/she is presenting the place, welcome the limitations of presentation techniques with a smile? Did these limitations provide possibilities for the architect to make artistic presentations and to transpose or *sell* the place as he/she wants? That is to say, *is the architect pleased with the limitations? Will he/she work on animation on computer with traditional presentation techniques?* Will he/she make a presentation, which revives an impression that the places are finished and unchangeable for its audience? Or will the architect try to explain the places to its audience in the most proper way in the presentations he/she did? Will the limitations of the presentation techniques that he/she had uses, always become an obstacle for the architect while presenting the place? *Will he/she prefer a presentation that will make him/her perceive the place as unfinished and changeable by depending on simulation?*

When these questions are considered, it can be mentioned that the architect will make his/her choice on animation. As a result, the architect is an

artist and will prefer the *artistic* narrative during his/her presentation. It can be pointed out that altering the place in accordance with the presentation he/she has done, deciding its colors and graphical proportions, not making his/her viewer (customer) active in the presentation and designing his/her presentation as he/she has designed the place as an artist, are the *privileges of the artist* that the architect will not want to give up. But here, being outside of the activity of *producing place*, which is the main duty of the architect, is the question. So in a plain expression, the architect gilds the design and becomes the *painter, graphic artist or cinema director*.

Simulations can also give these opportunities to the architect if some certain *limitations* can be integrated. Some researchers have been working on that kind of limitations on the interface or in the environment of simulations. For example in Burtnyk N. and et.al.'s research named *StyleCam* , the camera is fixed on some planes to limit user's choices on camera movement (Burtnyk et,al., 2003). In *StyleCam* environment, user can not zoom in-out by his/her own choices. He/she can only move the camera on a plane that defined by 3D artist (or architect). When user comes to the end of plane, a short video enters the scene and camera jumps to another plane. In the work of Saakers D. and the others, user makes his/her walkthrough by directing of a *guide* (Saakers et.al., 2002). Nietsche M. and the others' research is also on limitations of simulated environment. In their work, when user comes to checkpoints, a video which *can not be stopped* or *skipped* by user plays (Nietsche and the others, 2002). In all of these examples, the aim is to define *some limitations* that the artist can give his/her *message* about the space.

Rembrandt's painting "Staalmeesters"

But if the opportunities that architecture can have with the help of simulation's ability of mechanical *reproduction of reality* are considered, it will be useful to talk about the painting called *"The Staalmeesters"* which *Rembrandt* did in 1662. In that painting he

drew the textile merchant. (Figure 1) There are six male figures, who wear similar clothes, sitting and working at a table. It is recognized that it was a *made-to-order* painting. In accordance with the examinations of the experts, this painting had been made, brought to the patrons who had ordered it and had been changed in the light of critiques. The traces of erasing and changing on the painting can be traced by the help of the technology of laser.

The history of plastic arts is full of examples like *"Staalmeesters"*. The paintings, statues, musical compositions were made *made-to-order* in accordance with the demands of significant *tutelary* in the period before the Industrial Revolution, especially when the artist carried out their *job* in the manner of a *craftsman* just like the ironworkers, carpenters or farmers, and then they were brought to the people who ordered them and they were *changed* according to the critiques. But, of course, it would do over *the finished work of art*.

On that point, it ascertains an important difference that distinguishes architecture from other arts: up until now the architect gets assistance from other fields of art while he/she is presenting his/her art to the viewer. The subject of architecture has a large scale when it is compared to the other fields of art. For that reason, it is not possible for the architect to finish his/her work and listen to critiques then to reproduce the work in the light of these critiques.

Figure 1
Rembrandt " Staalmeesters"

Simulation's disadvantages and advantages

In that sense, *simulation* points out a kind of the birth date of Christ for architecture. Just like *Rembrandt* in the 17th century, the architect still mostly creates *made-to-order* works. However, because of the scales of this art, the architect, like Rembrandt, does not have the possibility of *finishing* his work of art, listening to the critiques and correcting it in the physical world. On that point, *simulation* enters the scene, makes us perceive the place *very close to reality* and opens it to criticism. That is to say, architecture has the possibility of being criticized over its finished state, maybe for the first time since the world is created.

Simulation may also give the architect the advantage that he/she has never had before: Because of the simulation's form, the architect who is not bound to the limitations of presentation techniques, will only show his/her art of *creating place*. He/she will have to do only architecture without considering the other fields of art like graphic or cinema. He/she will lose his/her chance of *casting dust in their eyes* by using the hand drawings, perspectives or the best taken snapshots of the model produced on the computer. Basically, this is a situation that *forces the architect to do only architecture*. There are lots of people who are affected less when they see the place, which they have seen in pictures or photographs in bare eyes. This is an illusion, an *interpretation* that is created by the art of the painter who has done the painting or the photographer who has taken the photograph.

Besides, when the examples are examined until now, it is found out that *architecture means designing the life in that space rather than designing the space from the points of graphic, color or illumination*.

One of the most important advantages of *simulation* emerges at that point. Although the examples have not been traced yet, it can be obtained that the spaces, which have not been produced yet, can be experienced in certain periods by the help of simulation techniques, soon. In that situation, the viewer (user, customer) escapes from making useless trips in the real (and short) period of time, which the simulation enters into. He/she may *experience* how the life develops in that place on certain periods. Even so that he/she can observe how the relations and collected lives materialize in that place by letting other users, who use that place, participate in the simulation. So this possibility means that simulation gives architect the chance –or the obligation– *to make only his art talk*.

Conclusion

As a result, *two types of usage* can be put on the agenda. First, there can be *integrated limitations* on simulation to have user walk in the virtual environment and understand the space in the way that *architect prefers*. This type of usage puts simulation among the *traditional presentation techniques* like watercolour perspectives, photographs, videos and 3D animations. But the second type of usage points out a *turning point* for architectural presentation techniques. When compared to animation (or to other presentation techniques), *simulation* is the presentation technique which is closest to *the mechanical reproduction of reality*. The presentation techniques except simulation have caused the architect to explain his/her art, compulsorily, over the other presentation environments. But the mechanical reproduction ability, which is the real simulation, will give architect the possibility of experiencing the form which has not yet been materialized in the physical environment, and the possibility of being criticized. The architect, maybe the first time, will succeed in getting the ability of *place designing art* not indirectly but in a direct way.

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