



THE CHALLENGES IN DESIGNING VISUAL NEW MEDIA

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The design problems in new media interactivity (i.e. the constraints against interactivity) are analyzed concerning visual new media in this paper. There are basic principles of interactivity which are introduced by Mark Stephen Meadows, in his book entitled *Pause and Effect: The Art of Interactive Narrative* and in this paper, these principles are used as a guide for a successful interaction design in visual new media. Even if he focuses his argumentation basically on interactive narratives, one can consider that the same principles apply to all sorts of interaction design in new media and it can be either interactive narratives or the interactive audio-visual new media. He classifies these principles as; “input/output”, “inside/outside”, and “open/closed”. (Meadows, 2003: 39)

Starting from interactive narratives, interaction design is, basically, a challenge. This challenge originates from the nature of interaction; interaction is a mode of communication and it is bi-directional. This property of interaction causes some problems during the communication process between two or more parties. There might be information loss depending on time and place differences, or there might be misunderstandings during the feedback procedure. These, as a result, cause an interrupted communication and participation which is an undesired outcome of an unsuccessful design in interactivity. As Brenda Laurel suggests;

... Poor interaction design can interrupt flow and degrade the experience.

Roughly, the three basic principles indicate that what is used as the input should bring an outcome; the output, as a result of interaction with a system. The interactive system continues to transform these inputs into outputs and creates new inputs from the

former outputs. This indicates that interaction is an iterative process, or a “spiral-shaped-loop” which cycles in time, but at the same time which improves its being with the feedback acquired from the user on the process. Also, as the second principle states, what is outside (or, outside the skull) is mainly dominated by the visual perspective and what is inside (or, inside the skull) is dominated by cognitive and perceptual perspective. This creates a dialogue between the external and the internal worlds. Even if feeling, meaning and experience are classified as “inside” and look, design and symbol as “outside”, these classifications may change during interaction. For instance, experience under “inside” the skull is related to the mental experience and cognitive perspective, however the bodily experience (or the physical experience) is related to the dimensional perspective and it should be classified under “outside the skull”. Similarly, look, design and symbol are “outside”; because after they are perceived and interpreted by the spectator, they start occupying a space in our mental presence and cognitive perspective. The third principle indicates that the system in which the interaction takes place gets better in time with the participation of the user. The user adds value to the process. The system in which the two parties act is an open system. How the user adds value is the problematic of interactivity. Mark Hansen considers human beings as interactive media in *Bodies in Code: Interfaces with Digital Media*. In other words, human beings are open interactive systems that also act as media and in order for the interaction to take place, immersive open systems should be formed in order to carry those properties of interaction. The challenge of interaction design in new media starts from this point. They have to design a system in which the two media interact with each other easily and both physical and mental actions should be in coordination.

Interaction designers structure a compelling argument and invite the audience to share in their work. (Kolko: 2007, 11)

Inviting the audience into the process and expecting them to engage in mental and physical interaction is dependent on the promise of experience. From the

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user's perspective, the experience of presence in a medium other than the Self should be encouraging. How can these users experience interaction? In order to sustain an uninterrupted flow during the interaction process, there has to be a successful interface design which will grab and immerse the user into the content and support this immersion by means of both context and content.

Content and interface merge into one identity, and no longer can be taken apart. (Manovich, 1995: 67)

Here, Manovich states that the immersive nature of new media merges the content with the interface and thus the design becomes a successful one. The technological devices help the user to get in touch and interact with the media. For instance, the computer, the headsets, the installations... They all help the user to interact. However, the technology itself cannot promise this. The complexity of the techniques used in these types of new media tools confuse the user and interrupts the interaction process. Here, the design of the interface, once again, plays a crucial role in the success of this interaction.

This is the current stage in the use of computer and telecommunications technology: it's no longer used only by professionals but by a wide range of nonexperts, who just want to use it to pursue their everyday lives. (Moggridge: 2007, foreword)

Interactive new media have become part of our everyday lives. Formerly, they were targeted to people who had prior experience in new media, but now, with the technological advances in everyday life, nonexperts are mainly targeted. So the design should be simple, and easy to understand. The designers face this struggle between technological complexity and simple design. This is one of the major problems in interaction design. Should the interactive system be a high-technology system which enables the user to discover new insights? Obviously, the answer is both "yes" and "no". Interaction should lead and encourage the user to discover new insights, yes; but the technology, or the

techniques used for such a purpose should not be very complex. For a system or a product to be fully interactive, it does not have to be highly technological since interaction is a concept which is applicable to fine arts, narratives, architecture and both analog and digital media.

The idea of inhabitable interface or architecture as an interface is not a new one. Architecture and architectural surfaces as interfaces for communication have been known and used throughout history. (Messaris and Humphreys, 2006: 283)

On the other hand, designers can combine high-technology with simplicity in a user-friendly fashion. Another problem caused by technological complexity can be the interrupted communication flow as formerly mentioned. So, simplicity in design becomes an important element in interaction design. Everyday tasks in our usual lives are already difficult because they require arbitrary learning. When the technological complexity element is added to this difficulty, people become unwilling to interact. The users look for simple solutions for their simple problems.

Everyday tasks are not difficult because of their inherent complexity. They are difficult only because they require learning arbitrary relationships and arbitrary mappings, and because they sometimes require precision in their execution. The difficulties can be avoided through design that makes obvious what operations are necessary. Good design exploits constraints so that the user feels as if there is only one possible thing to do – the right thing, of course. The designer has to understand and exploit natural constraints of all kinds. (Norman: 1988, 216)

Participation of the user is an important aspect in interaction design. When the user agrees to interact, the learning process begins. As the user becomes experienced, this learning process starts to be easier and it helps the user to adapt to the immersive nature of the interaction. The feedback acquired by the actions of the user creates new inputs for the next



stage of the interaction process. The easiness and the friendliness of the design encourages audience participation.

Designing interactivity is a complex issue. Firstly, one needs to consider the time and place of interaction and then comes the design principles of usability, usefulness and desirability. The designer not only tries to make the audience experience a particular emotion or a set of emotions, but also tries to make the content truly understandable. Since the design in interactivity evolves over time with the audience participation, this collaborative action is also considered to be the part of the design. Particularly in new media, the success of the interaction design is largely dependent on the success of the interface design.

What can be said about a successful interface design that fully drives the user in and causes an uninterrupted communication and experience flow? Manovich says;

... if in 'meatspace' we have to work to remember, in cyberspace we have to work to forget. (Manovich, 1995: 63)

This quote can give us a hint about the answer. A *successful interface design* makes people forget about the real boundaries of the physical environment and experience the reality of the fall-down of these boundaries.

The successful interface design encourages the user to take the control of the interaction process. This control should be easily displayed on the interface and the user should get feedback from the product. The tasks should form a bridge between the user and the system in which the two parties operate. This is one of the examples of how a successful interface design in context should be.

It is argued that what derives people to get in touch with these immersive environments is not composed of one variable; it is a combination of multiple variables and dimensions of experience design. Interactivity is very much dependent on the human experience and its perception.

When we compare old media and new media, new media helps the user to overcome the passivity and they offer more active consumption of the "new". What is meant by the "active consumption"? In the book *New Media: A Critical Introduction*, the authors summarize the active consumption in terms of interactivity as follows:

The term stands for a more powerful sense of user engagement with media texts, a more independent relation to sources of knowledge, individualised media use, and greater user choice. (Lister, Dovey, Seth, Grant and Kelly, 2003: 20)

All these user engagement tools lead to the user experience as Nathan Shedroff discusses. Here, interface design plays a crucial role. For him, experience is the place in which knowledge can grow and interaction is the means by which valuable experiences can be created. He mentions interaction while defining experience and this clearly states that they are inseparable. For him, "design creates experience". In his statements he defines design as the interaction design.

To me, interface design is the combination of three disciplines: information design, interaction design, and sensorial design. It is not possible to separate this relationship nor ignore their concerns. The goal of all these processes is clear communication in appropriate forms. This is done by creating compelling experiences and understanding the component of experience.

Nathan Shedroff

Another important aspect in interaction design is the perspective. The perspective concept has a very broad and important usage in new media studies especially in interactivity issues; because the basic and main concern of these studies is the user and the user's point of view. The usage and the correct application of perspective knowledge in media allows the designers to manipulate the system easily; because one of the major indicators of human presence is perspective. The perspective that the spectator sustains makes him/her capable of placing the self to the center of the visible world and this

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leads to subjectivity in the space forming the presence of the spectator physically and mentally.

There are two kinds of perspective in design; the cognitive (or emotional) perspective and the visual (or dimensional) perspective (Meadows, 2003: 6). In order to define the two types of perspective, we can talk about movies and how these two perspectives are applied in movies. The camera angles used in a movie to depict which characters are important, strong or dominating also underly the basics of dimensional perspective. For instance, a lower dimensional perspective probably make the spectator feel less important than the character in the movie. When the dimensional perspective starts to make the spectator think about these specific aspects of the character depicted, the emotional perspective starts to identify the spectator with the image. Both of these perspectives underly the above arguments' basis; because we have discussed that interaction has the two sides; physical and mental, experience has two sides; active and passive. And the notion of perspective is closely related to these two concepts.

A first quality of an interactive perspective is that it opens multiple points of view through the blurring of boundaries of realities and objects once conveniently fixed. This shifts the emphasis away from the object and tilts it more toward the subject who perceives. Viewers interact with objects in a way that celebrates subjectivity and diversity. (Arata, "Reflections about Interactivity")

Considering the experience as a learning process, it is argued that we can learn better, more effectively and more enjoyably by the reasoning through experience. This experiential learning mode involves fun and enjoyment but not the acquisition of long-term analytical skills. This is known as experiential cognition. In the experiential cognition, "the patterns of information are perceived and assimilated and the appropriate responses generated without apparent effort or delay" (Norman, 1993: 23). Once we are expert, the responses that are required come automatically and effortlessly. There is unconscious awareness in this experiential process and this

thought is automatic, reactive and driven by the information patterns. In an immersive environment while a spectator is interacting, s/he should use both experiential cognition and reflective cognition. This creates the notions of "inside" and "outside". As the user immerses into the process, the boundaries between the two start to diminish and the new media tool and the user starts to unite/fuse.

So, one cannot classify experience as only active or as only passive, because of the integrated nature of the interaction. When we talk about experience, we have to deal both with active and passive experience at the same time. Watching a movie may at first seem to be a passive experience when the bodily interaction is taken as the main focus. On the other hand, it is an active experience because it covers cognitive perspective as well and the mental interaction also takes place.

The "existential relation", which is defined as interactivity, has the components of space and time. Although they can be classified as the components of interactivity, in this paper they are counted as obstacles or constraints for interactivity in new media.

The constraint of time in the experiential space is implied everywhere in the ideas of movement, effort and accessibility (Tuan, 1977: 118). So, in immersion and interaction, we can talk about time and space as two collaborative subjective notions.

People differ in their awareness of space and time in the way they elaborate a spatio-temporal world. If people lack a sense of clearly articulated space, will they have a sense of clearly articulated time? (Tuan, 1977: 119)

Most of the new media objects; such as the CAVE installations and the "inhabitable interfaces" contain these notions of articulated time and its relation to space.

The greater the distance the greater the lapse of time, and the less certain one can be of what has happened out there. (Tuan, 1977: 121)



That's why we feel close in the temporal dimension while we are physically close to something in real. Timelessness can also be considered as another quality of distant places in this regard. In the inhabitable interfaces, the communication media begin to define the spaces that our bodies inhabit instead of physical walls (Messaris and Humphreys, 2006: 275). These inhabitable interfaces expand the notion of physical space and they provoke new experiences of closeness and proximity. Closeness and proximity are other versions for defining time and space.

Not only time and space are constraints for interaction, but also the external effects; such as distractions or the technological misuses and difficulties are counted as constraints. One has to overcome these constraints or even minimize them in order to interact. These distortions can be omitted with the help of the interface design. When we talk about technological complexity and misuses, the design should be 'user-friendly' which should allow the user easily to understand and manipulate the system.

Time in Interaction

Time in interaction can be defined as the duration of the experience. However, it can also be interpreted as the time of the image and the time of the spectator in visual new media. When we connect these nodes during interaction, we can successfully interact. Otherwise, because of the differences in time, nobody will be able to perceive the images represented as they have been.

When we refer to the time of the spectator, we are referring neither to this body time nor to the mechanical time measured by clocks. The time of the spectator refers not to some "objective" time, but to our temporal experience. (Aumont, 1997: 75)

So, when we define the time of the spectator, we can only count it as the duration of experience. It starts with the observation and lasts until the spectator puts an end to the interaction. The time of the spectator

and the time of the image should never be confused. The spectator has the freedom to look at an image as long as he wants if the physical characteristics of that image allows so. For instance, one can look at a photograph for hours; but one cannot look at a particular frame in a movie for hours, only for seconds. This can be defined as an aspect of the temporality of the image and it is surely experienced as a constraint for interactivity and immersion.

Almost all images 'contain' a time which they are likely to communicate to the spectator if the presentation apparatus is capable of doing so. (Aumont, 1997: 121)

When we come to the question of the "apparatus", it has a temporal dimension in relation to the spectator and the image. Apparatus is used as an ideological design model which is immersive and transparent. With these properties of the apparatus, the user will be able to perceive the reality in the content and get fully immersed into the media. The image is always considered as temporal and this stands as a constraint as stated above, however the spectator, with the help of the apparatus can overcome this constraint and interact with the image. The spectator can decide on the time of the interaction and he/she has this freedom. However, sometimes this freedom can cause other time constraints. The content of the image may not represent the spectator time and as they do not collide, the act of interaction and immersion may not be successful. Here, the transparent immediate apparatus eliminates this time conflict and bring both the image and the spectator to a same time frame. Thus, the spectator starts feeling present in time and immerses.

As another constraint, the outside effects can cause conflicts in the spectator- image interaction. In movie theatres, for instance, it can be argued that the dark atmosphere encourages the spectator to immerse into the screen; however the opposite can also happen and the atmosphere can also harden the process and act as a constraint. So, one can say that the variability aspect of time can also direct the spectator's attention to different directions in time and this also limits interaction.

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The apparatus design model should be so successful that it should omit the time intervals and omit the time gaps while the spectators enters into the world of the image. When the apparatus can achieve this, we can conclude that the time constraint is over. This is the ideology behind the apparatus. It should help the spectator to self-identify with the image. When the identification is achieved, the interactant feels present in the time frame of the image. This creates immediacy in interaction and in mediation. As a result, the time conflict is overcome.

Space in Interaction

The struggle between distance and proximity is fundamental to nearly any image-based experience and is the basis upon which most images become virtual. Irrespective of whether the experience is based on two-dimensional screens or three-dimensional simulations, there will always be some distance between the images that are seen and the viewer who is looking. This will only change if images become physical and sculptural objects or if the bodies of viewers become holographic. (Burnett, 2005: 72)

As stated in the above quotation by Ron Burnett in his famous book *How Images Think*, an image's physiology cannot change when it is once constructed and created. Also, the spectators cannot become holographic entities. This introduces the problematic of spatiality of both images and spectators; and this forms an obstacle towards interactivity.

It is always presupposed that the image and the spectator do not share the same space, and there is always a distinction between the plastic and the spectatorial spaces.

The spectator not only perceives the representational, figurative space of the image, s/he also perceives the plastic space of the image itself. (Aumont, 1997: 100)

In immediacy, not as a time concept but as a space concept, the distances shorten and it becomes for the spectator to sense the space as easy as he/she perceives his/her own bodily space.

As a part of the perspective, apart from using different camera angles, close-ups for instance are manipulations to overcome this constraint. In new media, the user is given the capability of doing close ups in video games, in internet, or the capability of zooming in and out. The success of the apparatus lies here; without even using physical technological materials, the system of mediation should itself represent itself according to the spectator's perception.

As a result, there is only one solution to this problematic of interaction concerning spatial differences and it is the immersive apparatus. The model apparatus brings the image and the spectator to the same spatial level and help them engage in interaction.

External Distractions and Technological Complexity in Interaction

As another constraint for interaction, we can count the external distractions and the distractions caused by the complexity and difficulty to use certain technologies during interaction in new media. The experience of the immersion and interaction is distracted when there are some external influences apart from the internal motive.

It is much easier to have this experience when there are no distractions to interrupt. (Norman, 1993: 33)

Not only in new media, but also in traditional types of media such as television, theaters or cinemas, the further away the spectator is from the image, the more distraction and interruption is involved in the immersion process. Usually the large screens and huge displays improve the spectator's ability to capture the event.

In any environment the event best captures the attention when the sensory experience is maximized and distractions are minimized. (Norman, 1993: 34)

The computer, for instance, interrupts the interaction when the dialogue boxes pop-up suddenly. Or while the spectator is looking at an image, the outside noise can distract the process of immersion.



The “apparatus” designed in new media should minimize both the external distortions and the internal conflicts. That is one of the ideology behind this successful interface design. The design of such immersive interfaces should not be much complex. The spectator should be able to understand how to use it and how to manipulate it. When the interaction process becomes an automatic response towards such an interface, then the immersion should not be interrupted by other sounds and visuals that might break down the bridge between the spectator and the image. Wearing head-sets in VR systems, or using earphones, surround sound systems are not ultimate solutions to prevent external influences on the interaction process. The apparatus should be so strong in reflecting the real experiences on the spectator that there should not be any need for physically disturbing head-sets or earphones like in the case of the immersive CAVEs.

To sum up, interaction design in new media is a challenge because both the designer and the user has to engage in complexities of time, space, technology, external distractions, passivity and experience. These constraints interrupt the communication flow, which is the undesired action of the interaction. Considering the space as an open system in which interaction takes place, there will surely be some obstacles to be overcome caused by the “outside world”. Using technology both as a tool to overcome these obstacles and as a means of these former obstacles is the basic issue. The designers should balance the complexity of the technology and the usability issues in order to create immersive interactive environments in which the users can fully participate without physical distortions and they should limit the interruption in the communication flow concerning the formerly stated basic principles of interactivity. The ideal interaction design should be as formerly stated “apparatus”. It has to be transparent and immediate in nature which will overcome those physical and mental boundaries between the two parties in the visual new media.

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