

Positioning Interactivity in Media Arts

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Abstract: After the Second World War, Technology Art has been tried to involve multimedia or environmental pieces consist of sound, light and kinetic elements. Interactivity is the most important elements of Media Arts, which one can experience with one's whole body and using one's five senses, create digital images and virtual reality. The paper demonstrates a relationship between the Interactivity and Einübung (empathy) in order to interpret artworks, reconsidering the historical background against which the two domains of art and technology have influenced each other since the beginning of the twentieth century. It is going to be more important to come up with skillful interface designs that connect that digital technology with the analog senses that the human body has to work with. Comparing the emotional communication in the conventional art with the bodily sensation through interactivity or virtual reality in Media Arts, this study discusses relationships between artworks and appreciation. We often have occasion to realize how much more interesting technology developed with a clear concept is than artwork, which simply parades cutting-edge technology for its own sake. The main reason is that works adopt computer technology or digital network, which is based on some insight into the nature of "communication," are stimulating our imagination and giving rise to new ideas. This raises problems concerning the essence of Media Arts, in short, the definition of the "artwork." If we set out looking for the meaning of interactivity, we will inevitably run into the problem of the boundary between artworks and appreciation. It is a subtle boundary that shifts position depending on whether ideas are arising from the artworks and how strongly we feel their impact like masterpiece.

Key words: Interactivity, Einübung (empathy), Media Arts

1. Introduction

Art history reveals that the art world has always been sensitive to new technologies, and that it has also served as the impetus for the creation of various technologies. Though most of the new digital technologies surrounding us today are still in their first stages of development, CG, VR, AI, robotics, telepresence[1], and network technologies have become fairly advanced and already constitute a major force to initiate changes in the form of art as we have known them. In the 21st century, we can expect major transformations in former concepts of art and the emergence of a plethora of new forms of expressions at the border between art and science, which will become a new model for communica-

tion. Interactive art, Media Arts in a broad sense, is a new genre. In the past, the artwork was for its audience to view passively. By contrast, the meaning of Interactive art depends on how the audience acts upon it and enters into a dialogue with it. Examples include packages on CD-ROM or DVD-ROM, works that invite a global-scale conversation via internet, and environmental installations with sound, visual, and sensor reacting to the audience's movement, for an interactive experience that involves all five senses. This paper demonstrates a relationship between the Interactivity and Einühlung (empathy) in order to interpret artworks, comparing the emotional communication in the conventional art with the bodily sensation through interactivity or virtual reality in Media Arts.

2. Aesthetic and Interactive Implications of Media Arts

When we approach artworks of Media Arts, we should take notes of the fact that these new art forms do not merely employ new technologies, materials, and methodologies, but that they aim to overturn the very concepts of expression, artists, and art appreciation. For instance, we might say that the overall form of artistic expression in operation until now was nothing more than a container for a one-way message sent from the artist to the viewer[2]. In other words, all the viewer did was look, listen, or read something created by an individual artist. The artworks of Media Arts respond intellectually and organically to the viewer's actions and overturns such as movement, gesture, and talking. Therein, the viewer is also able to affect the message and the mind of the artist who created it. Or rather, the meaning of the message is continually being created and modified through this interactive relationship. Traditionally, the artwork has attained autonomy from its creator in the moment of its conversion from an idea in the artist's mind into a material reality, and the viewer has considered the artwork to be the manifestation of the artist's creativity. Once the artwork was realized, it was compelled to remain the same for eternity. A single artwork could only present a narrative in accordance with the determined meaning by which it was received; the fluid imaginative powers and the momentary flash of sensibility contained within the artist's creative act were destined to remain trapped behind the door of reality. Therefore, the artwork is received as the trace of the artist's creative act. The artwork is not alive, but rather, the lifeless product of the artist. It is forced to exist in linear time, to maintain a single form.(Fig. 1)

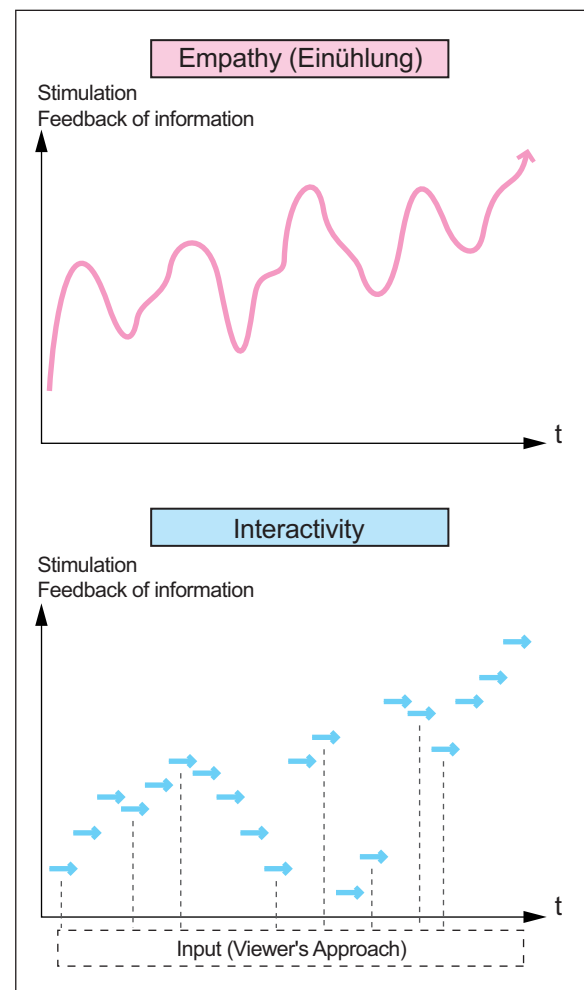


Fig. 1 Comparison Directivity in Appraising Behavior

Today, however, this concept of the artwork is losing its viability. Moreover, great changes are taking place in the positions of the artist and the viewer, and the one-way relationship that existed between them has also begun to collapse. Indeed, we may now be facing the end of the world of art that was constructed on the basis of the rigid terms “artist” and “artwork.” And on the other side of this terminus, something as yet nameless, something that will replace the artist and the artwork, is just beginning to emerge through the haze.

This new thing is a form of art capable of freely traveling between dimensions, and evolving and proliferating itself by means of media

that are in a constant state of change. It does not sever our various senses (sight, hearing, touch) from each other to render them inorganic; rather, it induces the various senses to work together, enabling the fusion and collision of one sense faculty and another. Not dead but alive, not silent but responsive, this is a form of art that continually transmits a multiplicity of messages in many dimensions.(Fig. 2)

Therein, the viewer is compelled to undergo great changes. It is no longer sufficient to simply look, listen, or read works of painting, sculpture, and music as we have been accustomed to doing. Active participation is required. Furthermore, since the art itself will change with each passing moment, we must take an organic approach to it in which we focus on the changes in our own sensibilities and actions and then return these changes once again to the space of art.

3. The Roots of Media Arts

As we know, in the history of art dating back to the Middle Ages several instances in each country can be found for the broader applications of interactive art, where artists themselves invited the active participation of the audience, and where viewers experienced the pleasure of solving a riddle. Trompe l’oeil and hidden pictures are one example. But apart from this trend, contemporary interactive art can trace its origins to the time when computers came into practical use in the 1960’s. A kind of game-like program developed when computer users freely chose a strategy for achieving a goal they set for themselves. In time, things progressed so that instead of computer input with keyboards, mouses or touchpens, mediation was accomplished by devices such as sensors reacting to the touch or body movements of humans. We can say that today’s Interactive art, Media Arts made its appearance when it became feasible for audience members themselves to take an active role in the world of the artwork through direct use of their bodies.

Artists who are responsive to curiosity as well as to the spirit and the leading technology of this

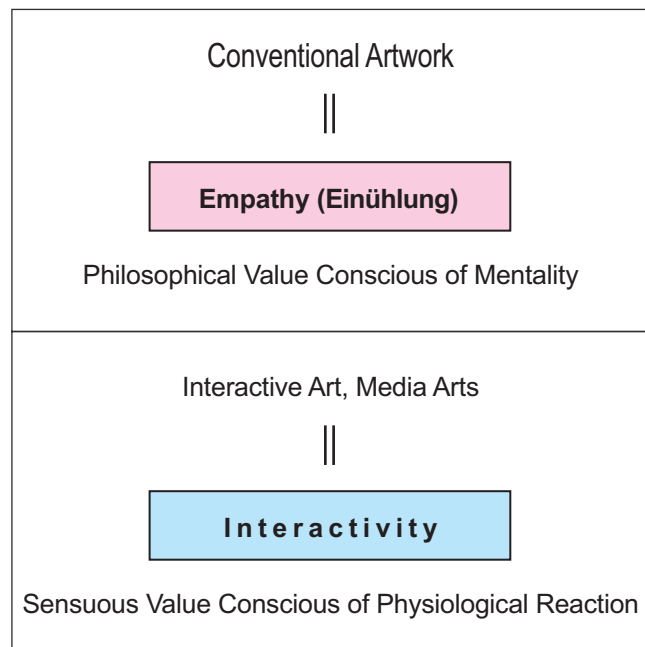


Fig. 2. Artistic Value

unusual era will not likely overlook this potential. In the latter half of the 1960's, the decade when computers were invented, we were already at a point where specimens of interactive art were beginning to be produced in countries all over the world.(Fig. 3)

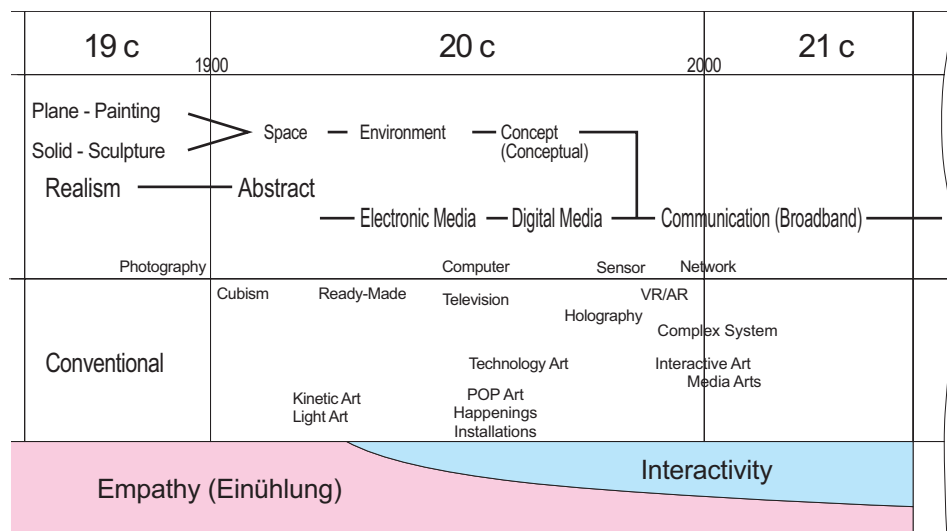


Fig. 3. Transition of Art Concept and Appraising Behavior

As Frank Popper describes the term

“interactivity” in his *Art of the Electronic Age*, this term expresses one of the most characteristic properties of art in the electronic age. Popper writes, “Until recently, mainly in the U.S.A., the term ‘interaction’ was restricted to the interplay between the artist and the apparatus, but at present it is also applied to the relationship between the artist and the spectator, established through different networks, ranging from purely electric or electronic devices to those involving local or world-wide operational points. This in turn implicates creative activity in a context, which has been widened to include not only professionals such as architects and composers, but also the wider public. [3] ”

Popper’s significant expression suggests that the concept of “interactivity” includes fundamental questions for the artist about his or her relationship to the artwork, while for those on the receiving end it implies the possibility of experiencing, as more intimate function, a connection with the artists themselves within the act of appreciation and through the meditation of the artwork.

4. Positioning Media Arts in the Contemporary Arts

From the viewpoint of contemporary art, one could think interactive art is not part of the Art World, but a separate act of creation produced from the broader workings of human knowledge. Certainly computer science and other technologies do fulfill an important role in this art concept. However, if we think about the merging of art and science, the unity of art and technology as a large theme within humanity’s creative activity since the dawn of the 20th century. It is fair to say that this merging is one of the new aesthetic endeavors that open up the future and reconstruct identity of art. On the other hand, there is also a kind of resistance communicated toward art itself up to now, which over the course of its long history became too authoritarian and tended to forget the subjective participation and interpretation of those on the viewer’s side. An element of the historical resistance movement against this authoritarian art is communicated in the spirit of today’s interactive art. From our current perspective, the new art movements of Marcel Duchamp earlier last century and the happening art of the 50’s were pioneers of a kind for interactive art[4] . The same kind of consciousness toward participation

has not only flourished in the field of art, but also in the sciences since the latter half of the 60's. Instead of the exhibit methods of art museums and science museums up to now, where historical memorabilia was shown to the public from a one-sided system of values, exhibits that privilege the audience's viewpoint are more and more appearing. New participatory museums responding to the opinion

that we must rediscover the meaning of natural phenomena are multiplying all over the world. In any event, we have come to believe it is necessary to rethink the historical background against which the two domains of art and science have mutually influenced each other since the latter half of the 20th century.

	Sense Organ	Media	Expression	Sensor	Communication
~19 c	Visual	Visual	Conventional (Painting·Sculpture)	Aesthetic Sense	Empathy (Einfühlung)
1970~	Visual Hearing Tactile Environment	Light·Movement Sound Body Environment	Interactive Art Kinetic Art Light Art Electronic Music Experience, Process Environmental	Infrared ray sensor Photosensor Camera sensor Audio sensor Tactile sensor Temperature sensor Humidity sensor	Interactivity
1990~	The five senses	Multimedia (Media Technology, Network)	Advanced Interactive Art Media Arts Digital Morphology Virtual Art Digital Communication	Computer Control (VR·AR, AI Network)	Advanced Interactivity

Fig. 4. Genealogy and Development of Interactivity

5. The Genealogy and Development of Contemporary Media Arts

With such a history in its background, from the late 70's to the mid-80's various interactive art pioneers appeared from wide range of backgrounds and places and began showing their new work. For example in the late 60's, American mathematician and artist Myron Krueger, who continues to do such works, exhibited an interactive exhibit of a maze set on the floor that changed with the participants' movements[5]. Since the late 70's students and researchers at CAVS and at the Architecture Machine Group, predecessor of Media Lab, in MIT, have produced unique ideas for interfaces and thus accelerated the advance of this interactive art. For example, Michael Naimark and Scott Fisher are two such pioneers in Interactive Art, as they participated in the development of Aspen Moviemap Project during their student days. Scott Fisher also developed a dance project in which a dancer's movements are automatically recreated as graphic images on the screen, and he later became a founder of a Virtual Environmental Workstation at NASA[6]. And since the late 80's artists from a variety of genres of past art forms have been venturing into this world one after the other, producing interactive artworks of unsurpassed artistic merit.

Jeffrey Shaw, director of the Institute for Visual Media at the ZKM (Center for Art and Media Technology) in Karlsruhe, Germany, is one person who earned the world's praise as he presented work after work of high artistic value full of metaphor and symbolism. Artists who up to now had been creating paintings, sculptures, music, and works of photography, design, dance and video gradually entered

	Empathy (Einühlung)	Interactivity
Object	Conventional (Painting• Sculpture)	Technology Art, Interactive Art, Media Arts
Media	Visual	The five senses
Range of expression	Plane• Solid (express limited space physically)	Space, Environment, Virtual Space
Representation	Static	Dynamic (Kinetic)
Form of artwork	Object (completed)/ Unchanging	Process (contingent)/ Dynamic
Artmaking	Artist	Viewer (User)
Communication	Psychic (Mental)	Physical, Physiological reaction
Feedback of information (Stimulation)	Low	High
Directivity	Linear/ Unchanging experience	Nonlinear, Complex/ Various experience
Appraising artistic value	Mental (Philosophical)	Sensibility

Fig. 5. Comparison Appraising Behavior in Empathy (Einühlung) and Interactivity

the world of interactive art. Also on the increase and setting standards for the world are those artists who exhibited their work at world-renowned professional launching pads such as the computer graphics conference of SIGGRAPH in USA[7] , and ARS ELECTRONICA held in Linz, Austria and known for events featuring the fusion of art and technology[8] . Accomplished artists have increasingly opened exhibitions all over the globe and ushered in a new golden age of Interactive art.(Fig. 4)

Behind these new trends in media art, construction of media culture centers as stages for creating and exhibiting new works is on the increase in Europe and the United States. The aforementioned Ars Electronica[9] , begun in Linz, Austria in the late 70's, set up a new prize category in interactive art in 1990, and inaugurated a new building, the Ars Electronica Center in September 1996. The following year 1997 in October, ZKM, which began its creative activity in the late 80's, was officially inaugurated as a large-scale media culture center. The Center for Advanced Visual Studies (CAVS), initiated in 1967 at MIT as a center whose aim was the integration of art and technology, stagnated in the early 90's when it failed to ride the current of the media era. Last year however, Professor Stephen Benton of the Media Lab set out to remake CAVS into a new arts center for the media age.

Even though computer based interactive Media Arts is about 15 years old, it is still an avant-garde activity that prefigures both direction of future art practice as well the direction of culturally meaningful commercial practices. Art practice in Media Arts generates precedents and models that with a time interval of several years become the reference for the more general social implementation of the new

media technologies. Thus Media Arts offers a test bed for the social engagement of these sometimes radical and always creative experiments with the new communication technologies, and give us intimate access to those ideas and processes that will inform the future of our technological culture.

6. The Characteristic of Media Arts

6.1 The distinctive art form of Media Arts

The unique character of Interactive art, even if we take only one work as an example, is that its progress depends on the artist's or the audience's attitude toward participation. This is a crucial difference from previous artworks. With art of the past, a work's value was frozen at the moment the artist completed it, thereafter becoming an object of preservation and speculation. In contrast to this tendency, interactive art possesses qualities whereby the artist or cooperating authors upgrade the program version or reform the interface design; in this way a new work is reborn when participation by viewers deepens its substance, provides for accumulation of messages, and makes the work grow as if it were a living thing. We can say that a feature of this creative field is that just as there is value in the first original work created by an artist, there is much anticipation for the growth process of the artwork.(Fig. 5)

6.2 Appraising Interactivity

Media Arts is not a genre like Cubism or Pop Art – rather it is a strategy of production directed at addressing the cultural implications and possibilities of the new media technologies in all its form and in all possible contexts. The viewer appraises artworks at various criteria, such as aesthetic grace, technical virtuosity, originally, interactive effectiveness, intensity of experience and intellectual challenge. Subject to the singular attitudes of the viewers and the equivocal nature of appraising, masterpiece of Media Arts will emerge due to a perceived concentration of such achieved qualities. The qualitative variety of all artworks is a signal that the heterogeneity of contemporary Media Arts practice is perhaps one of its most vital and culturally relevant features.

To take some examples of artworks, some artworks emphasize interactive functions with complex structures and narratives, and others focus on dialogue in order to think about new problems of communication. The former have an information style structured in multiple dimensions. They incorporate few random elements in the computer but represent a highly polished and autonomous aesthetic. The latter produce forms of interactivity with undetermined structures that enable linkages with information spaces of considerable breadth and depth.

6.3 The Problem of Interface of Interactivity

In any art form of Media Arts, interactivity is seen to be a new perceptual method, which has arisen from the development of media technology and it should not be forgotten that ultimately linked with the technologies of the spirit. The various artworks of Media Arts include experiments with panoply of interfaces and forms of interaction, but we get the strong impression that most of them remain stuck at the level of bodily organs without reaching the realm of the spirit. These Artworks are conspicuous which leave many problems unsolved at stage of concretization of the reintegration and reediting of awareness and perception.

It should also be added that Media Arts make us reconsider the methodology of interactivity in the process of our appraising. For this reason, among the concepts developed by artists under theme of interactivity, we have to appraise the level of perfection of the artworks from the perspective of

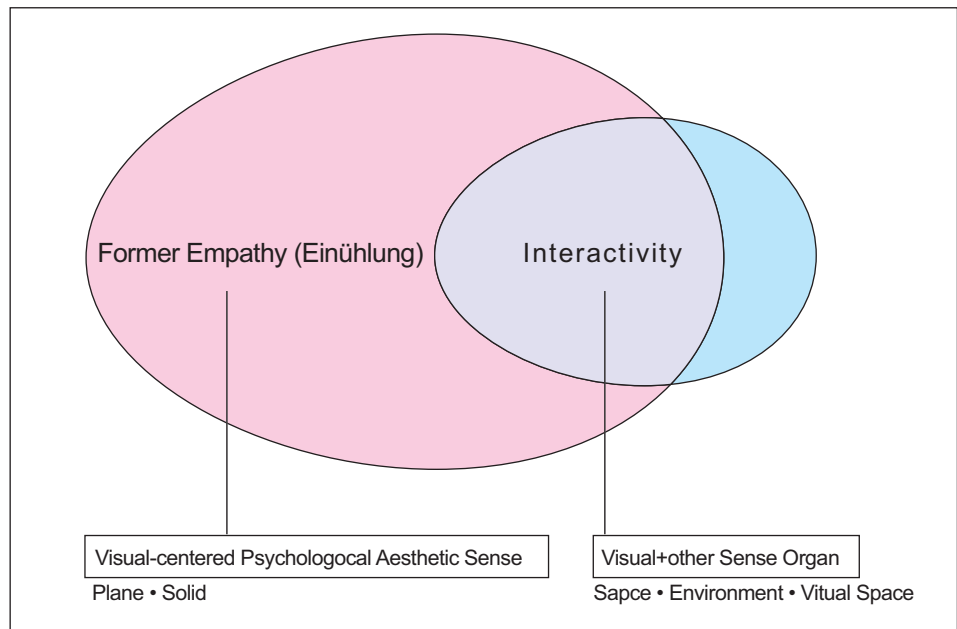


Fig. 6. Former Empathy (Einühlung) interpreted in a broad sense

interpretations of current technological methodologies and the manner of their visualization. Creating interactivity requires that the viewer engage in some kind of manipulation in order to appreciate the artwork. By requiring sophisticated actions from the viewers in order to respond interactively to the artist's intention, some artworks run into the contradiction that it is extremely difficult to satisfy a random selection of viewers.

In most cases, artist sets the mode of interactivity unilaterally and the viewer has only to participate obediently in the preestablished interactivity. What is the artwork for, and for whom does it exist? Participating artwork turns out to be merely a mechanical matter or too much like a game. There are several other examples. Many of the video games we have today, as well as older card games and even children's battle play requires an enormous amount of sophistication as forms of interactivity emerging out of play.

In this sense, today's Media Arts give us a close-up view of the difficulties inherent in responding to the challenges posed by the theme of interactivity.

7. Conclusions

Interactivity is, simply put, tool we can feel with our all senses. If conventional computer digital technology is abstract and operates through the manipulation of signs, interactivity enable more natural communication according to fundamental bodily and tactile analogue behavioral principles that human beings are born with. They also represent an attempt to replace the computer as black box with gentler tools that works as extensions of our four limbs and appeal to the everyday curiosity and aesthetic sense of everyone. Needless to say, developing such tools requires sophisticated computer expertise, but it also calls for insight into human nature from the perspectives of cognitive psychology, aesthetic sensibilities, and ethics.

Media technologies are now facing enormous transformations as a result of changes in everything from the nature of digital technology to the structure of the state, economic and political activities, and the context of art and culture. And yet as a new media culture is being born, Human existence tends to be perceived as just another sign and actual bodily and psychological ontology is gradually lost. Experiments of interactivity in Media Arts represent an effort to slow the rush of digital technology toward aimless functionality by bringing it back into line with the psychology of human behavior and to make the information society of the future more human, more a part of our daily lives, and more ethical[10] .

The concept of interactivity is needed in today's society, based as it is on invisible digital technology. If the essence of artwork begins with the process of lending visual form to unconscious human thoughts and memories, interactivity is interface to aid in that process. The success of the *Post Pet* and the mobile phone in reinventing communication as play force us to reevaluate our understanding of interactivity and the stance of the artist. In the departure from the norms of Western contemporary art, with its demand that art be critical, lays the new potential of Media Arts.(Fig. 6)

In this age when media technology is transforming society and culture, we are beset with the task of creating an environment in which information can be enjoyed. This can be accomplished by giving abundant forms to interpersonal communication and rendering visual, the relationships between people and information. By establishing free and easy connections between the past and the future, the individual and society, and between visual space and physical movement, Media Arts visualize an environment in which we can connect art and technology.

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