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# *The Future of the Interactive Museum: For a New Aesthetic beyond the Border of the Network*

**Colophon**

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As the global pandemic continues, life as we know it is undergoing significant changes once again. Looking back in history, the first change in this process was digitalization, which began in the late 1980s. The phenomenon, sparked by the popularization of electronic networks, has transformed our whole society into a new format and is not limited to turning paper books into digital documents. That is how this form of communication, which initially only existed online—first through PCs and then through mobile devices—began and then gradually expanded. Even in this wave of increased digital communication growing for the past 30 years, if there were areas that have been firmly emphasizing physical experience, they were the performing arts and art exhibitions. In the past, it was common and natural for offline spaces to be the center for performing arts and art exhibitions. At the time, the most important aspect of them was a one-time, hands-on experience. Many people pointed out that the reason was the irreplaceable aura of the actual scenes where the performance and exhibitions occurred.

However, COVID-19 is now pushing us into a new transition, as social distancing has become a necessity. Even performing arts and art exhibitions are quickly being replaced by non-face-to-face, long-distance communication. Instead of offline performances, "non-contact" concert screens are provided at venues every day (with virtual audiences, not virtual artists!). Art museums and galleries present their collections at their virtual museum, led by a large network such as *Google Arts & Culture*. The interactive aspect of digital technology that has enabled this new form of communication is becoming stronger. In particular, viewer experience is closely related to the interaction that new media technology implements, especially for electronic museums that aim to do more than just hold virtual exhibitions. New questions that have arisen here include what the viewer experience implemented by these technologies provides and how to recognize excluded or left beings from the beginning of such viewer experiences. This article seeks to take a closer look at the technical interaction that is a prerequisite for these new questions and then develop one possible answer. What is included here is a brief history of the interactivity concept developed while using computer technology. I would also like to critically explore examples of interactive aesthetics in digital literature of the characteristics I list in this piece.

## Digital Technology, Interactivity, and the User

At the start of the digital media era, people began paying close attention to interactivity. This was a moment to inform us not only that the way of accepting the new media had changed but also that the image of the users dealing with the media on the other side had also changed. Images of people adopting new media have been highly idealized, including well-known pictures of some standing directly opposite to passive and manipulated TV-watching couch potatoes. These people were considered very self-conscious "intellectuals" who were very familiar with the media, dealt with the media actively rather than passively, and used the media while clearly knowing what they wanted.[1]

This brings up the question of when the "cool" user image started. Along with the term

1
These images are reflected in the names of the two major web browsers which led users to the world of the Internet when the World Wide Web began to grow explosively in the early 1990s. Literally, they were "Explorer" (web browser of Microsoft) and "Navigator" (web browser of Netscape).

"new intellectuals" in the digital age, it is safe to say that the image began in the early 1990s when new media, which blanketed the world with dense electronic nets, slowly changed our daily lives. At this time, belief in the democratic and revolutionary potential of new information technology spread and was centered around Silicon Valley. This view, so-called "Californian ideology," looked very hopeful at what a future digital media would deliver.[2] An alternative society that was completely different from the existing society seemed to be built in a virtual space prepared by technology, and it was believed that boundaries restricting real-life biases—such as nationality, race, culture, and gender—could all be eliminated in this virtual space. The term "digerati"[3]—which means emerging digital literati who have the ability to manipulate new media, regardless of their original social class, the region of birth, or educational background, and who will lead the coming era of electronic democracy—originated here.

Citizens of the new network society were interested in the unlimited and unmonopolized flow of information. And what was most emphasized in this trend was the independent image of the user, a person who can make choices even though they are amid an enormous amount of information. This trend evokes an image of the one who decides. Network users believed that they could make direct choices between the various possibilities provided by the media and participate directly in the configuration of the objects they wanted to accept. Yet, in the history of computer technology development, the interactivity concept started when people emphasized the possibility that humans could intervene in the process at any time, allowing machines to perform repetitive tasks, with the vision of forming a "partnership" with machines. This early optimistic belief had a significant impact on our current reality, one in which we have to rely again on technology to devise new ways of enjoying culture. However, are we really playing a leading and creative role in the use of digital devices today? To answer this question, we need to take a closer look at the history of interactivity.

## A Brief History of the Interactivity Concept[4]

Interactivity, which is in the same context as the transition to a performative society,[5] has become one of the most popular terms in the digital media era. It is based on the perception that we have accepted a different standard for culture and our ability to deal with it. If the ability to enjoy existing culture was mainly understood as observing or interpreting objects that are difficult to understand, the ability to actively intervene in ongoing events has now emerged at the forefront of that definition. What is highlighted in this process is a "human" or "user" who is the subject of action. This can be easily understood by looking at how the concept of interactivity began and has developed over the years. The interactivity concept has been proposed as an alternative to artificial intelligence research since the early days of the development of computers. Rather than a machine that thinks independently of humans, it was designed to be ideal for humans and machines to work together to complete tasks. Today, the human role is understood as performing new tasks or making decisions step by step, while the machine was envisaged to take on repetitive tasks or parts that could be replaced by computations. Thus, in interactive systems, unlike the concept of artificial intelligence, the role of humans intervening in the process of handling tasks and communication is emphasized.

This begs the question: When did such a machine that can interact with humans emerge? A little back further in time, it is clear that until a certain period in the West, the meaning of "machine" was used only to mean something that was exactly opposite to interaction. The beautiful mechanical doll Olympia in the German E.T.A. Hofmann's short story *Der Sandmann* (1816) always spits out the same exclamation of "Ah!" regardless of the protagonist's passionate confession of love. (However, the male protagonist considered

2
See Inke Arns, *Netzkulturen* (Hamburg: Europäische Verlagsanstalt, 2002), 34.

3
A compound of "digital" and "literati," this word was once used often in Korea under British and American influences.

4
For a more detailed history of the development in the concept of technological interactivity, see: Jörg Pflüge, "Konversation, Manipulation, Delegation: Zur Ideengeschichte der Interaktivität," *Geschichten der Informatik: Visionen, Paradigmen, Leitmotive*, ed. Hellige, H. D. (Berlin, Heidelberg: Springer, 2004), 367-408.

5
"Performance," which values active interactions or initiatives, is a term originally derived from theatrical studies. Recently, it has drawn attention as an interdisciplinary concept that can more clearly explain the various phenomena occurring in each area of our society. As for this concept, see: Lutz Musner, *Wie wir uns aufführen: Performanz als Thema der Kulturwissenschaften*, translated by Cultural Studies Society (Seoul: EuroBooks, 2009).

this emotionless exclamation to be a very attractive response and fell in love with her even more deeply.) In other words, whether immediate interaction was possible or not has been considered as a way to distinguish humans from machines for many years. Over this time, the only interaction between humans and machines was regarded as a start and stop button. This was not so different from computers that people began developing rapidly in the early 20th century. Once a calculation command was entered, even if there was an error, the user had to wait until the computation process was completed, and then start entering again from the beginning. Konrad Zuse's Z3 (1941), which has historically been recognized as the first electronically operated computer, could only calculate in this way. If a human intervention were possible to correct errors at any time in the interim, the overall computational time would be drastically reduced, and the process would also become more efficient.

## The First Stage of Interaction: A "Conversation" with Computers

Based on this need, Norbert Wiener, an engineer who moved from Europe to the United States, created "cybernetics." According to Wiener, cybernetics can be understood as a very general science of "control and communication in the animal and machine."[6] In a book he wrote that was published in the United States in 1948, Wiener explains that machines of his era would soon break away from closed systems that work like clockwork and would evolve into an interactive stage. Following Wiener's vision about an era in which humans could cooperate and interact with machines just like people treated living creatures such as cats, the first goal of the interaction concept that was pursued in earnest began in the 1960s as a "conversation" with computers.

Joseph Licklider, a psychologist and computer engineer, and one of the major developers of the Advanced Research Projects Agency Network (ARPAnet), which later became the predecessor of the Internet, published a paper titled "Man-Computer-Symbiosis" in 1960. As explained above, what Licklider was primarily focused on was to enable human intervention in the problem-solving process by machines; in other words, turning batch mode computers into conversation mode computers. However, his idea went a step further, inheriting Wiener's vision, with Licklider writing the following: "Man-computer symbiosis is an expected development in cooperative interaction between men and electronic computers."[7] Thus, he refused to develop computers into artificial intelligence, which posed a threat to mankind, and sought to find a third alternative path between mechanically extended man and artificial intelligence. Put simply, humans are not to be replaced by machines, but they complement each other.

Of course, Licklider's goal that humans and computers team up as if they were colleagues and share roles was not realized at the time. However, the Compatible Time-Sharing System (CTSS), developed by MIT at the time, was the historic first step toward the commercialization of human-computer interaction by choosing a conversation mode where commands could be entered at any time during processing. The size and cost of computers were enormous. Thus, the ability to use them was extremely limited to facilities like laboratories at large universities. As such, a time-sharing system was a combination of conversation mode and multi-programming techniques, allowing multiple users to use a single computer at the same time. In this conversation mode, the entire process—after input—was not carried out at once and without interruption, as was previously done; instead, the process was divided into stages, allowing user intervention at each stage. The ability to deliver commands even in the middle of processing data, and the use of a computer responding to them, gave the impression of having a "conversation" with the machine. In particular, such examples included a debugging system that discovered and eliminated problems, as well as a trial-and-error system that was a process

6
Norbert Wiener, *Cybernetics: Or Control and Communication in the Animal and the Machine* (1948). (Mass: MIT, 1961)

7
See J. C. R. Licklider, "Man-Computer-Symbiosis," IRE *Transactions on Human Factors in Electronics* 1(1), (1960): 4-11.

of solving problems after repeated errors and retrials.

However, compared to the original goals of some, the conversation mode in the actual operation process consisted of simply a repetition of instructions and subsequent performance rather than "conversations." Furthermore, as the environment of using computers itself changed, the concept of interaction also quickly changed. After a period of sharing the main computer, which was dubbed the "Great IBM Era" by some in the history of technology, miniaturized personal computers were introduced. Through this change, our interaction with computers entered the second stage of development.

## The Second Stage of Interaction: The Period of "Direct Manipulation"

The time-sharing system gave the impression that users were running a large machine under joint control. This experience would also affect the concept of interaction in the next period. Above all, the era of a laboratory's main computer, which was like a giant dinosaur, passed. And personal computers sprang up on the desks of users. This began to change the relationship between humans and computers rapidly. The first personal computer, the Apple Xerox Star (officially named the "Xerox 8010 Information System"), was released in 1981. It was highly personalized in terms of usage compared to that of computers in the previous period, with the most advanced feature being the direct manipulation method. Apple's Xerox Star was designed to allow the user to select graphic elements on the monitor to operate programs.

Although it was a very revolutionary change, these innovations were largely attributed to inventions from the previous era. As far back as 1963, Ivan Sutherland (then a Ph.D. student at MIT who would later devise a virtual reality device) invented a "sketchpad" to implement graphics on a monitor. Then, two years later, Douglas C. Engelbart, a pioneer of hypertext systems, laid the foundation for the "mouse," a multiuse tool to connect with a monitor directly. In particular, Engelbart presented a vision of opening a new chapter in human-computer relationships, assuming that computers—which up until then had been used by some university research institutes, but mainly in tasks for national security—were a tool for "augmenting man's intellect" for everyone. In other words, he came up with a plan to use computers "routinely" as "a tool for improving thinking skills for everyone."[8] Engelbart believed that computers for everyone should not be something only to be dealt with through complex machine languages; its manipulation had to be direct and easy, with immediate, visible results.

Based on this development, the American computer scientist Ben Shneiderman defined one's interaction with a computer in a personal use environment at the beginning of the 1980s with the following characteristics:

1. Continuous representation of the object of interest
2. Physical actions or labeled button presses instead of complex syntax
3. Rapid incremental reversible operations whose impact on the object of interest is immediately visible.[9]

Under the motto of "Computers for Everyone," the era of direct manipulation opened wide. Mouse manipulation, like direct handling of icons visible on a monitor, gave birth to a new concept called a graphical interface. The monitor became a place where humans and computers met. At the same time, it was also a cross-section of the real world and the virtual world. As the interface began to develop, the image of computers was reduced to a screen monitor for humans. The hardware behind this all—the main body of the computer—disappeared behind the user-friendly environment displayed on a monitor.

8
Douglas Engelbart, "A Conceptual Framework for Augmenting Man's Intellect," *Vistas in Information Handling*, ed. Howerton, P. W./Weeks, D.C (Washington D.C.: Spartan Books, 1963), 1-29.

9
Ben Shneiderman, "The Future of Interactive Systems and the Emergence of Direct Manipulation," *Behaviour and Information Technology* 1(3), (1982): 251.

This phenomenon was accelerated with the development of technology. In the present day, when personal computers have become an "old medium" (which is hard to believe), the small screens of smart mobile devices have become a daily gateway to the virtual world, and an object we can always carry with us.

## The Third Stage of Interaction: The Period of "Commission"

The concept of direct manipulation, which directly selects and activates objects on the monitor, faced a conflicting situation in the early 1990s due to the emergence of the World Wide Web and the rapid dissemination of Internet services. On the one hand, the graphically supported user environment and the direct manipulation represented by the use of the mouse have become essential elements of using computers. On the other hand, however, in order to advance into highly complex networks beyond the personal world that personal computers had been constructing, advanced interactions came to be required rather than the passive response of icons waiting to be activated; we now had come to expect active initiatives on the computer side.

The new function that emerged first in this period was an "agent." Introduced from the realm of artificial intelligence on the opposite side of the interaction concept, an agent software relieves overloaded users of work and information and simplifies complex tasks. Licklider's computer "colleague," who had been inactive during direct manipulation, had returned to us. This colleague filters out incoming e-mails, checks schedules, sends out notifications about today's schedule, automatically translates foreign languages, selects music, changes backgrounds, introduces entertainment to suit my taste, and lets us know of bestsellers around the world this week. Most of all, it warns of and fixes viruses that have secretly infiltrated themselves into our operating systems, while also upgrading computer systems. This period is especially characterized by a more simplified graphical interface and programs that omit complex functions for an operating system. People believed this would relieve a user's burden compared to the period of direct manipulation, when everything had to be checked and controlled by the user alone.

In short, the last stage of the interaction concept emphasizes that the computer is a personal assistant that performs various tasks on behalf of the user's interest or understanding. In this stage, the most important aspects of computer use are simply joy and efficiency, rather than national security or augmented man's intellect. The complex functions of computers remain unknown to many, especially those parts that can cause errors when the user accidentally touches them are hidden. As a result, the user can now use a computer's very simple features, which are always easy to use. The computer has provided a form of entertainment tool that is optimized for personal use. It also helps multiple users to participate simultaneously, not just by themselves, if necessary, creating an interspace by expanding the interface from the previous level. This became a meeting place for many human participants and agents. These agents often appear with a visual appearance designated or preferred by human participants, and that is the characteristic "avatar" feature of this period. Avatars, which are being developed specifically in the field of computer role-playing games, were originally a term for the incarnation of a god in the form of human beings in Hinduism. Yet in the age of computer networks, it became a term meaning the "virtual emergence of communication partners."[10]

At the same time, however, the evolutionary direction—in which agents and avatars appear, complex functions are hidden in computer operating systems, and monitors are filled with simple icons—also led to users getting caught up in a "user fantasy" more deeply. User fantasy is a fantasy whereby a user believes that he or she is in control of

10
Norbert Bolz, *Die Wirtschaft des Unsichtbaren*, Translated by Yoo Hyun-joo (Seoul: Munhak Dongne, 1998), 179-180.

the system while using a computer. In fact, it is closer to the truth to say that we don't understand this system at all. Norbert Bolz, a German media scholar, mentions that it is no shame to admit this fact in our times. How many people can drive a car while completely understanding what is going on below its hood?[11] The problem with computers is that, unlike cars, we are not aware that we do not know anything about the system. Software agents can be easily installed and deleted, but access to their creation or changing code is closed to general users. What if we had agents that were developed against us? There are actually such agents as those as well. They are malicious code, spyware, virus programs—and what if they have been attacking our computer systems? Can we still control our systems at a time like this?

In this way, we can see that the interaction concept has developed toward alienate users from the source code of the system under the pretext of enhancing user-friendliness. Similarly, the distance between programmer/writer and user/reader is not becoming any closer with the development of digital media, but getting farther and farther apart. This is certainly the opposite of the Californian Ideology in which the equal network of new media drives us to a new democratic world. At the same time, that the creators and the consumers become the ones in the same condition. This can also be applied to the structure of the social networks that have recently been in the spotlight. Are active participants on Facebook, Twitter, and Instagram creative producers realizing one-man media, or are they simply consumers of commercially completed programs? The different perceptions derived from the history of digital literature development will help us more fundamentally contemplate the use of advanced technologies related to the acceptance of artworks.

## Interactivity in Digital Literature

From the first stage of development, which is aimed at conversation with computers, to the stage of direct manipulation and commission, the concept of interactivity has been developed primarily around the vision of human-computer cooperation. The web structure was originally considered the best way to build the fundamental characteristics of digital media and interactive concepts. As a result, the history of hypertext, which constitutes the web and the history of intertext concept development, often overlap. This underlying motivation has also had a great impact on the formation of a new form of media art. This is where we can look at some examples of digital literature based on web structure. Art created a new format thanks to the structure of this new media. At the same time, art had the power to criticize the structure on which it was based. That is also why we need to actively ally ourselves with the (media) artists who thought art was a future exploration tool.

Let's go back to the optimistic outlook of the early '90s. Along with the new electronic virtual world, the disintegration of the hierarchy and democracy from below was discussed, and more intimate personal media was expected to replace traditional broadcasting. While there was literature represented by fiction, there was hyperfiction on the web. Hyperfiction organizes stories through hypertext links, and people read different plots while choosing the words linked to the text. Hyperfiction was well known that elevate the status of the reader to become a "co-writer" who helps complete the work, not simply the receiver of the work by giving the reader a choice to influence how the story progressed. Beyond the newly coined word "wreader,"[12] terms like "the end of books"[13] or "the death of the author" were indeed declared prematurely, and a two-way medium in which the information receiver turns into a producer seemed to have finally been realized. Looking at early hyperfiction works, we can see that the focus was actually on maximizing the possibilities that the reader could choose the work they wanted to read in person. For

11
See Bolz, Die *Wirtschaft des Unsichtbaren*, 138-140.

12
A compound word of "reader" and "writer." George P. Landow, "What's a Critic to Do? Critical Theory in the Age of Hypertext," *Hyper/Text/Theory*, ed. George P. Landow (Baltimore: Johns Hopkins University Press, 1994), 35-36.

13
Robert Coover, "The End of Books," *New York Times*, June 21, 1992.

example, the "interactive story of the prototype,"[14] *WG-Gespräche*, which appeared on the Internet in 1996, has a typical tree structure that splits from a node. Here, each node makes the reader one who decides about one of many possibilities. Since this work was originally sampled for a university class called "Interactive and Co-Creative Writing on the Internet," it faithfully wove in the following aphorism of hypertext literature at the time: the aphorism that readers had the final say on the flow of the next story. At the same time, however, this work became an example of how the reader quickly loses their initial interest through mechanically continuous selection in unimaginative digital literature. Unfortunately, this side effect is found in many works of digital literature, even if they are quite interesting from a different perspective. It is easily overlooked that the reader needs sufficient motivation to do so before choosing between many links. Such a weakness is fatal, especially when the reader does not know why the link needed to be there in the first place.

Therefore, interactive aesthetics requires partial automation to invigorate the reading behavior in which the reader always has to make choices. This development direction can also be seen in the history of the interactivity concept development, as discussed earlier. Agents that appear in the final stage of interaction either shorten or automate the user's work. Interaction at this stage partially absorbs the concept of artificial intelligence that had been at odds with it until then, and this active intervention from computers in an increasingly complex user environment is considered essential. Likewise, in hypertext literature, it has become necessary to actively give the text a "talking to the reader" function, not merely to connect the piles of text waiting for the reader's choice on the screen. As this means automation gives the reader the ability to decide or control, it shows the opposite direction from the principle of choice and combination by the one who decides that hypertext literature generally aims for.

## The First Strategy for Interactivity: Automation and Inszenierung

An example that can be called almost classic is the 1997 work "Grammatron"[15] by Mark Amerika, one of the pioneers of hyperfiction in the United States. On the first page, the reader can choose between "High Bandwidth" and "Low Bandwidth," and this decision results in different reading experiences. When the first choice is made, "Interfacing" starts, and the text automatically converts with graphics, music, and narration and moves at a predetermined time. This automated page flip was seen as a new technique by readers back then, especially when dealing with the work for the first time, as it saved readers the necessity to click on every link, one by one, to uncover basic information.

Since the 2000s, this partial automation developed into a technique of staging(Inszenierung) that emphasized the artistic composition of the work. The Inszenierung of digital art is a term borrowed from theatre studies and refers to a form of automated performance programming embedded within hypertext. Technically speaking, many Adobe Flash programs and JavaScript programming language software are used, even though the performance is hidden from view and only activated when the reader touches or clicks a specific object on the screen using their mouse. One example of how the digital Inszenierung of theatrical techniques brings out dynamic characteristics in texts can be found in Frank Klötgen's *Endlose Liebe*(2005),[16] a hyperfiction novel which is designed as an online musical full of images and sounds. In *Endlose Liebe*, the screen where text should appear is changed to a stage for the drama, where graphically expressed characters appear, with brief words provided on the scene, while at the same time having everything staged with their pop-up windows. Just as people can rearrange props on the stage through mouse clicks and select characters from the sentence "Who Loves Whom?" on the first page, there is still the possibility of a reader's participation, the trademark

14
This work has not been released on the Internet since 1998, this part is as cited in the following text: Beat Suter, "Hyperfiction – ein neues Genre," *Der Deutschunterricht* 2, (2001): 9.

15
Mark Amerika, *Grammtron*, 1997, http://www.grammatron.com, November 25, 2020.

16
Frank Klötgen, *Endlose Liebe/Endless Love*, 2005, http://www.hirnpoma.de/trashical, November 25, 2020.

of hyperfiction. However, the typical characteristic of the genre—to develop various narratives through a combination of texts —was greatly reduced through *Endlose Liebe*. Instead, the characteristics of stage shows, such as multimedia shows, have become more impactful than before.

## The Second Strategy for Interactivity: Rupture and Reflection

The second interactive strategy is that hypertext literature not only attracts the reader to be willing to participate in the work but also enables reflection on the medium beyond that. In the first strategy which I just described, automation techniques used in Inszenierung have unexpected effects: this becomes an opportunity to awaken the reader to the essence of the medium for a short moment, as the reader's opportunity for intervention, which was thought to be always possible, disappears. Coming back into view along with automated processing is nothing but a method of operation unique to digital media that has not been highlighted before. In reality, users or readers cannot exert an important influence on the work. This reveals that the experience of interaction (which has been believed to be true) thus far is fundamental "user fantasy," not real interactions with text/computers. To be more precise, all responses from text/computers to the reader's choices are only the result of the author/programmer having programmed them for such a case. As a result, the reader/user can only stay on the surface of the medium; they cannot affect the text/system at all. This aspect of digital literature can provide a valuable opportunity to reflect on the nature of the medium. Didn't the role of art originally lie in twisting the given reality and making what was both natural and invisible visible? This moment of reflection can be strategically emphasized to enhance the artistic perspective of the medium. The virtual interaction with computers that have become a routine for us reveals the properties of true digital media only when a system error occurs. The mouse that does not follow the user's directions, the cursor that does not move, the key that does not appear on the screen, a window that cannot be activated, a warning window that just popped up—and the damn blue screen!

Nikolai Vogel's "Die Lesbarkeit der Weltliteratur" (2002, 2004),[17] in which texts of various sizes and forms overlap one another, focuses on showing receivers that in fact, they are not interacting with the work. On the first page of this work, the reader comes face to face with several literary pieces. Every quote is from the scriptures of world literature, all of which relate intertextually, and in this work, they not only have a metaphorical meaning but relay a visceral impact on the user. Before long, it turns out that "readability" is really a problem here, with pieces of text in different fonts, sizes, and colors increasingly overlapping with one another, making the text less and less readable. Of course, readers can choose several functions in this work and manipulate the text through it. For example, they can make the title of the text appear, change the color of the text to full color or black and white, or open some notes to read about the work. However, these functions do not help at all to improve readability. The reader cannot directly intervene in the numerous and overlapping parts of the text to move or resize them. Such functions are the most urgent manipulation in order to read something, but they lie outside the possibility of choices provided by the author. It is the interactivity that becomes a theme in this work through an absence of interactivity. This is because the unexpected, like the sudden suspension of immersion—which makes the reader feel they have failed to enter the work and bounced out—is provoking the reader to reflect on the characteristics of the medium.

The more extreme disconnection from user fantasy is described by Adrian Ward's software art *Auto-Illustrator* (2001) through intended malfunctions. At first glance, the program is a graphic tool with a very similar interface to Adobe Illustrator, a popular software drawing

17
Nikolai Vogel, *Die Lesbarkeit der Weltliteratur*, 2002, revised 2004, http://www.literatursuche.de/lwl, November 25, 2020.

program. However, when a program is executed, and a function is selected, the program runs a completely different command from the user's expectation. Soon "it becomes clear who is in charge of the creative parts in this human-computer relationship[···] This software rather controls users by inaccurately applying usages standardized by large enterprises. The user is never allowed to gain control of the program because they cannot understand the relationship between what happens on the monitor and the processing that is caused by it."[18]

The very project is cynically twisting the fundamental idea of perfect interaction, which allows human beings to handle the creative parts in dealing with technology and computers to handle mechanically repetitive tasks. That is, the project discloses that the interaction at this stage is exactly the opposite of the idea. This kind of project reveals the naked face of digital culture, highlighting the fact that in a highly technical digital media environment, a simple user has no choice but to give up the control of tools for convenience. In order to use digital media easily, one should not try to understand what happens below the surface and only stay on the surface that is allowed to the user.

The problem is that a user-friendly environment based on a graphic user interface that executes commands by manipulating icons with a mouse conceals this fact, leading to the impression that the user is in control of the entire system. In these situations, *Auto-Illustrator's* intended malfunction suddenly defamiliarizes the user-friendly environment, thereby causing a rupture in the media usage, which had previously become habitus. Eventually, it makes us observe the medium itself, not what the medium delivers. This is sharply distinguished from the attitude of merely consuming and accepting something. This point of perception can again serve as a starting point for us to ponder the invisible nature of the media in the entire digital world, something that is replete with virtual effects.

If we take a step further from here, we can finally talk about computer viruses—the inflammatory and destructive aesthetics of computer viruses. From an aesthetic point of view, computer viruses have an ambivalent role. First, it is understood that the concept of interactivity at this stage has revealed its negative side because computer viruses are no different than adversely installed agent programs. As notorious destructors that break down users' computer systems in a short time, these viruses are also digital versions of the always-repeated literary topos, a machine rebellion against humans. On the other hand, computer viruses are considered to be the only example of overturning the boundary between producers and receivers, which becomes stronger as technology advances further. In the final stage of technology, we see a world of dichotomization behind a "user-friendly" environment, one divided by the technological prowess[19] that German media scientist Friedrich Kittler called "hidden code." The production and dissemination of deadly viruses neutralize this code—at least briefly. In this way, viruses are a behavior of trying to deviate from standardized standards and escape from routine cover-ups in a very aggressive manner. At the same time, remembering that the role played by art and literature in history was also such deviant behavior, we can find the point of contact between viruses and aesthetics.

## Looking beyond Superficiality

To date, I have looked at the development of the interactivity concept related to computer technology and examined the aesthetics of interaction based on this development. With digital literature, the development into a strategy that attempts to talk to readers through partial automation and Inszenierung actively is consistent with the trajectory in which the concept of technological interactivity has developed. In the end,

18
Christiane Heibach, *Literatur im elektronischen Raum* (Frankfurt am Main: Suhrkamp, 2003), 253-254.

19
Friedrich A. Kittler, "Protected Mode," *Computer als Medium*, ed. Norbert Bolz, Friedrich Kittler, Georg Chr. Tholen (München: Fink, 1994), 209-220.

however, it has turned out that, as art has always proven in history, the core of digital aesthetics lies in providing us with reflective moments on what we face. This will serve as a meaningful premise for future museums seeking viewer experiences beyond mere exhibitions. What has been revealed by reflecting on media is that in the interactions implemented through technology, humans have not actually been allocated a creative space, and the observation that online networks—where all boundaries were once thought to have disappeared—have been replaced with new boundaries.

The first boundary allows us to reflect on the history of digital culture and have a more critical approach to the relationship between technology and art. Let's look back at the achievements of digital literature over the past 30 years. We can see that the more advanced the programming that forms pieces of literature, the more seriously how works are received depends on external influences. This result is exactly the opposite view that consumers can be easily turned into producers through two-way interactive technology. This is evidenced by the fact that the author's power in digital literature is being strengthened. The author has become a programmer, or a project director, someone who even influences a reader's association to the work. As technology develops with the aim of bringing humans and machines, or the producers and receivers of works of art closer, it is realized only on the surface of the media, and the technological gap behind it has never been widening.[20] Now we see extreme polarization behind a user-friendly environment that explains everything with icons; there are groups of a select few that are allowed to access code below the surface of technology and a number of ordinary users who only stay on the surface.

The second boundary occurs inside and outside the network. In fact, the most significant boundary of our society lies between those who have access to the network and those who do not. Technology does not emphasize the fact that there is a form that is forced upon those who want to enjoy it in the first place and that they cannot participate in technology unless they accept the form. If we assume an immaterial museum that welcomes everyone in an open network, it is not mentioned that it requires accessible physical devices to participate in the museum activities. And the museum is only allowed for those living in a place where the network infrastructure is installed. These boundaries will more solidly divide our post-capitalist world into two, dividing those who have access to technology and those who do not, even if they are in the same space. Therefore, it remains a challenge for us to seek a new direction for sharing artistic enjoyment, breaking away from the optimistic expectation that developing technologies will realize everything we want—to go beyond the new boundaries of our time and for the (non-) viewers who have been excluded from the beginning of a project. This will also have to be done along with the task of considering the developmental direction of the next stage of interactivity.

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See Chong Kwa-ri, *The Navel of Civilization* (Seoul: *Munhakgwa Chisongsa*, 1998), 118-119.