Coevolution:
Cybernetics to Posthuman

Colophon

NAM JUNE PAIK ART CENTER
백 남 준 아 트 센 터

COEVOLUTION: CYBERNETICS TO POSTHUMAN

Sooyoung Lee
Curator, Nam June Paik Art Center

With regard to Nam June Paik's writing style, the points tend to deviate from the main idea, be extended, and come to un unexpected conclusion, rather than a logical analysis based on a single subject. But there exits a kind of 'relationship building' strategy in his writings. It is a way of producing more relationships instead of branching out based on the main subject. Therefore, his articles provide the readers with deep thoughts and insights by means of new relations that they have not thought of. Nam June Paik aimed to write about cybernetics in this way. The article titled "Aesthetics and Cybernetics" consists of an introduction and a list of 15 relationships in place of the the body. It suggests a few topics that are related in a broad category under the two themes of aesthetics and cybernetics that don't seem to have something in common. Paik's style of writing in terms of 'building a relationship' is based on the premise that those who read fill the relationship between 'this' and 'that.' Paik shows the way of building a relationship in the introduction.

Introduction — Norbert Wiener and Marshall McLuhan: Communication Revolution

This article, "Aesthetics and Cybernetics" first published in the Institute of Contemporary Art Bulletin in 1967, illustrates how relationships are formed between cybernetics and media theory, seemingly two different and irrelevant subjects. Nam June Paik discovers 4 parallels from Norbert Wiener, the originator of cybernetics, and Marshall McLuhan who wrote *Understanding Media*.

The first parallel is the notion of intermedia. Wiener claimed that there was no one like Leibniz who could call themselves as a mathematician or a biologist without restriction, although there were many experts of a specific field. For this reason, he emphasized the necessity of cybernetics based on the interdisciplinary communication and connection. In fact, the concept of intermedia is also related with the discussion of dialectical development as well as the integral use of the media by Fluxus artists including Paik and Dick Higgins. But Paik especially focuses on the transition from the electric age to the

electronic age in the development of cybernetics. In other words, the electric age based on the technique of strong current moved into the electronic age in which control is available using the technique of weak current due to the development of vacuum tubes. As a result, mixed media were able to be used in the global village. McLuhan also pointed out the difference between the mechanical systems and the advent of electricity, explaining cybernation. He believed that following the age in which the power and the work are in direct relation, such as hand and hammer, steam and piston, electricity with a 'strange elasticity' created communication among light, energy and information in the electronic age. McLuhan observed that "Just as light is at once energy and information, so electric automation unites production, consumption, and learning in an inextricable process."[1] In this way, the electronic age in which communication and control became available as Paik thought came and was connected to the 'mixed media' in McLuhan's global village.

The second parallel is established by a relation between the message included in the well-known phrase of McLuhan, "The medium is the message" and information theory that cybernetics deals with. Paik mentioned about the message and information Wiener claimed in the following way:[2]

> Norbert Wiener said "the information in which a message was sent plays the same role as the information in which a message is not sent… In fact, it is possible to interpret the information carried by a message as essentially the negative of its entropy and the negative logarithm of its probability. That is, the more probable the message, the less information it gives. Cliches, for example, are less illuminating than the great poems." Wiener then presents an interesting hypothesis: White noise or a random structure has the maximum quantity of information.

1   Marshall McLuhan, ed., Terrence Gordon, *Understanding Media*, (California: Ginko Press, 2003), p.463
2   "Mari Bauermeister or "I Accept the Universe," 1972, in Edith Decker and Irmeline Lebeer, eds., Nam June Paik: *De Cheval à Christo et Autres Écrits*, (Bruxelles: Lebeer Hossman, 1993) pp.145–146

McLuhan paid attention to the importance of the medium and said that the change of the medium would bring about that of the message. What is interesting is that Paik added John Cage and himself to this relation. He claimed that Cage might have said that a 'notation with which music is playable plays the same role as the notation with which music is not playable.' For Cage, a score full of notes and the empty score in which nothing is written, namely, with the word 'Tacit' can be performed in the same way. Paik also confesses that some of his pieces are 'playable music' but most of them are 'not playble.' When it comes to Paik's representative symphony pieces, they are so conceptual that most of them are not performable without Paik. In this way, the extension of the relationship McLuhan–Wiener–Cage–Paik is created.

The third parallel between the two persons that Paik suggests is the "simulation or comparison of electronics and physiology." The theme of cybernetics originated by Wiener was 'control and communication between animal and machine.' Cybernetics was created by the completion of the anti-aircraft gun from the research on the feedbacks of the animal's nerve systems and during the process of applying it to the control system of the anti-aircraft gun, and that of comparing differences continuously. Wiener attempted to find something in common through the analogy between animals including humans and machines and build a bridge for communication. He intended to understand and design the machine through the human and understand the human through the functions and feedbacks of the machine. For example, there was an attempt to understand the human brain through comparison with a computer at that time. As Paik indicated, the binary code of the digital was also understood as the Neuron synapses of the human, which is either on or off. Paik found such an attitude from McLuhan as well and quoted McLuhan as follows: "We wear all mankind as our skin⋯ Man extended, or set outside himself, a live model of the central nervous system itself."[3] That is, as a medium is an extension of a human, communication among all mankind becomes available more easily as close as our skin. Thereby we can imagine the matrix of communication composed of a number of nodes elaborately. Further, McLuhan explained that media

[3] McLuhan, op.cit., pp. 65–70.

such as television will have an immeasurable influence, mentioning about the extension of the human's central nervous system.[4]

Lastly, Paik considered uncertainty as a common point in both Wiener and McLuhan. Uncertainty, namely indeterminism, is the largest legacy that Paik inherited from Cage as well as the keyword throughout Paik's art. He linked indeterminism to entropy discussed in cybernetics and relates it to the cool media of McLuhan again. Wiener believed that for the increase of negative entropy temporarily at least in the first law of thermodynamics in which entropy increases, information should be delivered through communication and control. For Claude Shannon, who is another pioneer of the early cybernetics, information is defined as a measurement of uncertainty related to the selection of a message by the source of information, not the quantity of information. Therefore, with a random choice of a message (in other words, if the rate of choosing a random message is the same) the maximum amount of information is produced. It is similar to McLuhan's classification of cool media and hot media focusing on the fact that the characteristic of each medium determines the degree of participation of the receivers. In the case of media such as telephone and cartoon, since very little information is given to the receivers, they need to supplement the rest by themselves. In other words, public participation is indispensable to those media that offer uncertain information. It can be associated with Cage's music filled with silence and white screen or white noise filling the television that Paik emphasized. Following the four parallels, namely, the things in common between the two, Paik suggests a decisive difference. Wiener used the four characteristics of cybernetics (Mix-media, media-related study, simulation of electronics and human nerve system, indeterminism) as the micro-form to establish the interior environment of electronics, whereas McLuhan used them as the macro-form to explain the psychological and sociological exterior environment. With the same components, Wiener formed the interior of electronic study, while McLuhan described the exterior influenced

4   McLuhan predicted that since we extended or translated our central nervous system into the electromagnetic technology, it is but a further stage to transfer our consciousness to the computer world as well. Then, at least, we shall be able to program consciousness in such wise that it cannot be numbed nor distracted by the Narcissus illusions of the entertainment world. Ibid, p.89

by the media in the electronic age. Besides, Paik also mentioned about the two extremely different perspectives of the optimist McLuhan and the pessimist Wiener. However, Paik ultimately discovered one more crucial similarity between these two. It is also related to the mix-media. Both cybernetics and McLuhan's writing style pursued the 'mergence of various forms' based on the extensive knowledge. Wiener, who was mathematician, attempted to relate his research to the fields of history and philosophy and finally coined the new word 'cybernetics' that came from a greek word. McLuhan, a professor of English literature, integrated reading and writing such as probing and drilling by quoting extensively from classical literature to contemporary text. Paik probably discovered the value and possibility of integrating or building a relationship among those that seemed to have nothing to do with one another. So he suggested the significant list of the 15 relationships by finalizing the introduction.

List Dealing with the Relationship of Aesthetics and Cybernetics

Introduction (Norbert Wiener and Marshall McLuhan)

1. Cage and classics
 · Cage and Hegel, Cage and Montaigne, Cage and Heisenberg, Cage and Stirner, Cage and Korean pottery

2. Zen and electronics

3. Aesthetics of boredom
   a) Oriental tradition. Indian cosmology – passive philosophy of China – space in Sung painting. Static court music in Japan and Korea, (Gagaku-shijo) – the progression from boring art to ritual art (Noh) and to ritual itself (tea) and the diffusion into the stylized everyday etiquette (Ogasawara-ryu-Kosugi)
   b) European tradition (Ennui). Baudelaire – Chekov – Proust – Wagner – Satie – Yves Klein
   c) American tradition. Gertrude Stein – Hemingway – Cage – Lamonte Young – Dick Higgins – Fluxus – Jackson MacLow – Bob Morris – Emmet Williams – Warhol – Primary Structure (Including baseball, life insurance, stockmarket and drug)

4. Mini Art and Japan
  · George Brecht and Basho
  · Ray Johnson and Issa
  · Event as Haiku theatre (George Maciunas)

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5. Art and technology
  · from electronic music to electronic painting
    (difference and similarity)
  · Seurat and colour TV
  · possibility of medical electronic as an art medium
    (Lucier – Tenney – Titlebaum – Lienau – Paik) possibility of
    video taperecorder
  · various techniques, used in 9 evenings festival
  · various techniques, used in my own electronic art work

6. Computer and Audio – visual arts
  · Max Mathews – Jim Tenney – Peter Denes – Micro Noll (Bell
    Labs) L. J. Hiller (Illinois) K.O.Goetz – Max Bense – Xenakis
    (Europe)
  · my own ideas and experiments

7. Conceptions of Time
  · India – Greece – Bible – Newton – Bergson – Gibbs –
    Husserl – Heidegger – Sartre – Cage – Wiener –
    Stockhausen (time series)

8. Conceptions of Nature
  · Jean Jacques Rousseau – Théodore Rousseau – Henri
    Rousseau – Montaigne – Hindemith – Suzuki

9. Theory of Confusion in the oldest Chinese historian
   (Ssu Ma Ch'ien) and the newest American historian (Arthur
   Schlesinger Jr.)

10. Is pot on instant Zen?

11. Communistic interpretation of Laotze

    (from North Korean Source book)

12. Word composition in Finnegan's Wake and Chinese
    characters

13. Feldman's notation and Korean medieval notation

14. Theatre of symbolism
    · Sophocles – Allan Kaprow – Noh – Korean Mudang

15. Non-professionalism in Bunjinga and Dada

I would like to add some more to the list in the way Paik did.

16. Psychosis and sudden unintended acceleration
    · Human – Machine – System

17. Cybernetics and human components
    · 2nd World War – Haman and war machine – Computer
    · Simulation – Interface and Artificial Intelligence

18. Cybernetics and Cyborg
    · Machinism – Plato – Descartes – Engels – Cybernetics

19. Artificial Intelligence and social solidarity
    · Cognitive science – Neuroscience – Socialism
    · Capitalism in AI era-social solidarity

20. Cybernetics and lyricism
    · Gregory Bateson – Nam June Paik – Anthropology and Art
    · System – communication – Paik's cybernetics – Mind

21. Špela Petrič's works and technoscience
    · Hybrid arts-BioArt-Anthropocene

22. Taeyeun Kim's works and virtual life

23. Ensemble of 'nature – technology – human'
    · What is the posthumanism beyond cyborg?
    · Simondon – Hayles – Nam June Paik – Posthumanism

24. Nam June Paik's works and posthumanism
    · Inside – outside – inside – outside – recursive dynamism
    · recursive dynamism and *Magnetic TV*, *Electric Super Highway* and *Robot Family*

The above list shows the stages towards the recent controversial subject from cybernetics to posthuman. The list of a variety of subjects that replace the main body parts will provide the readers with the most productive thoughts and imagination instead of knowledge. And this long list will be followed by a little conclusion titled "Coevolution: Cybernetics to Posthuman".

Conclusion — Coevolution: Cybernetics to Posthuman

Coevolution, suggested by Charles Darwin for the first time, is a concept used in biology. Coevolution is a phenomenon that the evolution of a species affects that of other related species. In other words, it refers to a process of evolution that one-to-one reciprocal interaction between a predator and a prey is formed. But as the notion of coevolution was applied to the field of artificial life, it could be used a great metaphor as well as technology in the mutual relationship between human and machine. The evolutionary process of cybernetics that started in the 1960s, passing through three stages to nowaday's posthuman stage, can be seen as an effort of illuminating the relationship between machines and humans with a concept of 'coevolution'. That is, cybernetics and posthuman are part of several stages of coevolution of life and technology. As the introduction dealt with cybernetics, the conclusion will focus on the subject of posthuman and the prospects of the circumstances afterwards.

Paik's vision of posthuman can be seen in his writing as follows. In 1967, he left a memo like a kind of science fiction about the future to Billy Klüver, an engineer at Bell Telephone Labaratories as well as the founder of E.A.T(Experiments in Art and Technology).

> Intellectuals will all have a laser phone and wireless telephone conversation with several people at the same time will be available everywhere in the world. And thanks to the scanner technology and matrix circuit, etc., more information will be able to be sent to a single circuit. This circuit will integrate audio, video signals, the pulse, temperature, humidity as well as blood pressure. If it is made of rubber to be filled with air and is connected to a robot inserted with cathode-ray tubes, and if it is a pretty 'female robot'⋯ Have telesex![5]

In his essay "Some utopian fantasy and a few ideas for Billy Klüver," he talked about a breakthrough that laser technology will

5 Nam June Paik, "Some Utopian Fantasy and a Few Ideas for Billy Klüver," 1965, in Edith Decker and Irmeline Lebeer, eds.,

Nam June Paik: *De Cheval à Christo et AutresÉcrits*, (Bruxelles: Lebeer Hossman, 1993) p.176.

bring and showed his imagination about a very innovative robot. 25 years later, in 1992, he added a postscript to this essay, saying that he was surprised and glad to realize that he had predicted wireless telephone and virtual world. Again 25 years later in 2017, it seems that Paik already predicted robotics and Artificial Intelligence that we now imagine. In fact, sexbot is not that impossible and will take a considerable part of the AI robot industry. Thus, other than sex, the best thing that AI can do on behalf of humans might be an emotional communication with us. At that time, he was planning a street performance with the Robot K–456 created by the latest engineering technology from Japan. The mission given to the radio–controlled Robot K–456 walking the streets was to present the surprising technology as well as touching music to the people on the streets who had not experienced contemporary art yet. But at the same time, it seems that he had a concrete conception of a robot combined with a biological life by merging the signals of diverse information into a circuit, namely a system. This robot might represent us, posthumans, whose physical life and information are indistinguishable and that use smartphones and wearable body measurements.

For a discussion of posthuman, we need to go back and see the book *How We Became Posthuman* written by Katherine Hayles in 1990. In this book, the real posthuman subject is an amalgam, a collection of heterogeneous elements, a material–information entity whose boundaries are continuously constructed and reconstructed. According to this book, the decisive characteristic that defines posthuman is not the human form like a cyborg, which is part of a machine and whose material and non–biological composition is changed, but the way the subjectivity is composed. Humans can no longer guarantee their identity in the same manner as in the past. For this reason, posthuman also means the liberation from the subjectivity with a human–centered historical, intellectual, capitalist, political and sexual hegemony. Critical posthumanism is understood as a pursuit of expansive reconciliation and solidarity with a variety of inhuman actors, escaping from the liberalist 'anthropocentrism' like Rosi Braidotti. On the other hand, transhumanism that aims to overcome human's biological limitations and realize the singularity by taking the maximum advantage of technology is also regarded as posthumanism. In this way, there might be many perspectives in defining posthuman. But the main focus here is on the link between

Paik and insightful perspectives of posthuman circumstances based on Yuk Hui's argument of posthuman as pharmakon. In the interpretation of posthuman as pharmakon[6], posthuman is seen as a poisonous situation as well as a new opportunity of exploring the relationship between humans and technology. It is also similar to Bernard Stiegler's strategy of elaborating the duplicity of technology through the conception of pharmakon. According to Gunther Anders, humans feel shame that they are inferior to machines that they made (Promethean Shame), undergoing technological advances. Whereas machines created by humans play an essential part in the production process, humans are no longer the main agents of the production and just monitor the process, excluded from it. Hui claims that the phenomenon that Anders diagnosed is 'posthuman' and the essence is not just an ethical, ontological revolution, but the material condition that requires more intensified analysis. Anders pointed out the psychological and existential crisis of humans beyond the simple criticism of industrialization. And Hui highly appreciates this point. Hui intended to show that there existed politics of humans and technological objects between critical posthumanism and transhumanism. In this regard, posthumanism is not only an opportunity of reconsidering humans and technological objects, but also a 'remedy'. The perspective of seeing posthuman as pharmakon can relate to a phrase of Paik's "Cybernetic Art."

> If Pasteur and Robespierre are right that we can resist poison only through certain built-in poison, then some specific frustrations caused by cybernated life, require accordingly cybernated shock and catharsis.[7]

Pasteur cultivated the germ several times and finally created the vaccines with a little poison, while Robespierre expelled the king during the French Revolution and also became a victim of the revolution. What Paik says here is about the technology that functions as pharmakon. Paik was deeply concerned about the situation in

6   Yuk Hui, 'On Posthuman as Pharmakon– A Dialogue with Günther Anders and Gilbert Simondon.' 2017 (manuscript)

7   Nam June Paik, "We are in Open Circuit", 1965, in Dick Higgins, ed., Manifestos (A Great Bear Pamphlet Series), (New York : Something Else Press, 1966) p.24

which humans were suffering and their life was neglected due to the rapidly developing scientific technologies and the automated system as a result. Paik believed that humans' frustration and pain caused by cybernation, that is, posthuman situation, can be overcome through already cybernated shock and catharsis, namely, Paik's electronic art, as built–in poison becomes medicine. Paik already noticed the dualism of technology and expressed it in various ways. Paik made a distinction between old technology and new technology and it is well reflected in what he said, 'The more I work with TV, the more I think of the Neolithic.' He also expressed his conflicting feelings about technology: 'I use technology in order to hate it more.'; 'We want technology as much as we hate it.' What is more important is that Paik did not treat technology as merely a tool, or just put it in the black box, or regard humans as salves to technology. For him, the relationship between humans and technology was the most important theme.

> The real implication in 'art and technology' does not lie in making another kind of scientific toy, but how to make technology and electronic media more humane... *TV Bra for Living Sculpture* is one sharp example to humanize electronics⋯and technology. By using TV as bra⋯the most intimate belonging of human being, we will demonstrate the human use of technology, and also stimulate viewers, not for something mean, by stimulate their phantasy to look for the new, imaginative, and humanistic ways of using our technology.[8]

TV Bra for Living Sculpture by Paik is a piece dedicated to Charlotte Moorman. Moorman used to attach two small TV sets to her breasts when she played the cello or performed *TV Cello*. The viewers might have looked at her breasts covered with small television sets. These small televisions including the images of the viewers or showing Paik's video work were little lovely machines that viewers did not have to be afraid of or feel uncomfortable with. He did not want

8   Nam June Paik, "Participation TV, TV Bra for Living Sculpture," 1969, in Judson Rosebush, ed., Nam June Paik: *Videa*   '*n*' *Videology* 1959–1973, (Syracuse: Everson Museum of Art, 1974) unpaged.

to use technology as a tool. He considers technology as something new, imaginative and humane that can exist for humans. He dreamed of the ontological transition of the technological object as something closest to humans by catching technology that changes so rapidly and neglects humans somehow. For Paik, art is not just a playful entity but something that helps to restore the relations between humans and technology and the imagination itself that can suggest a new relationship between the two.