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# *Ensemble of Nature, Technology, and Human: Posthumanism As Seen in Simondon, Hayles, and Nam June Paik*

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**Editor** Sooyoung Lee

**Translation** Seong Eun Kim, Eunjoo Sung, Sangeun Lee, Sohye Lee, Hyungju Woo, Semin Choi

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# ENSEMBLE OF NATURE, TECHNOLOGY, AND HUMAN: POSTHUMANISM AS SEEN IN SIMONDON, HAYLES, AND NAM JUNE PAIK



JAEHEE KIM

Jaehee Kim
Visiting Professor of Sungkyunkwan University

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Jaehee Kim, Visiting Professor of Sungkyunkwan University, has researched the Contemporary French Philosophy, Philosophy of Technology, and Posthumanism. She earned a Doctorate degree in philosophy from Seoul National University and worked as a Research Professor at Ewha Womans University. Her main books are *Simondon's philosophy of technology* (2017), *Henri Bergson's Conception of Virtual Unconscious* (2010), and *Matter and Memory: Movement of Repetition and Difference* (2008). Her main translations are Gilbert Simondon's *Du mode d'existence des objets techniques* (2011) into Korean and Jacques Derrida & Bernard Stiegler's *Échographies de la télévision: entretiens filmés* (2002) into Korean.

## Cybernetics and Posthumanism

When cybernetics had first appeared in 1948 in Norbert Wiener's *Cybernetics: Or Control and Communication in the Animal and the Machine*, the term indicated that living creatures and inorganic machines were able to be regarded as the same because both could serve as systems of communicating and controlling information. The notion that bodies of animals or human beings can be dealt with as machines, of course, had already been argued by the 17th-century philosopher René Descartes or by Fritz Kahn, who described the human body as a type of factory in his images such as *the Doctor of the Future* in 1939. The idea is almost like common sense today. However, the term cybernetics can be a step further from the notion because it focuses on not the sameness of creature and machine but the feedbacks of both for controlling their own systems by receiving information from external environments. Cybernetics, derived from the ancient Greek word Κυβερνήτης,'[1] has often been translated as a branch of science which involves studying artificial brain, while it generally encompasses convergence fields of research on "feedback communication and controlling operation" that can be applied to physics, biology, and social sciences. Currently cybernetics has been applied to a variety of fields, including technology engineering, mathematics, biology, business administration, economics, sociology, media and media studies, psychiatry, psychology. Because cybernetics has treated machine and human being as the same "information processing system," it has played a critical role in developing posthuman society. And posthumanism is dismantling the absolute boundary between human and machine while carrying out "mechanization of human" and "humanization of machine."

Posthumanism can embrace "post-humanism" and "posthuman-ism." The term basically implies critically surmounting or transforming existing human, humanity, and humanism. Serving as a paradigm of thought from which "post-human" — beyond human, or after human — is being sought on the basis of two different sources, development of scientific and technological capability and reflection of the humanities. From the aspect of scientific and technological

1 kybernetes, meaning a helmsman of a ship, or a regulator.

capability, trans-human or cyborg, whose biological capability of mind and body as human is enhanced by genetic, pharmacological, or mechanical methods, and artificial intelligence (AI) robot or android, who has human-like ability and can replace what human beings do, can be said to become "posthumanized." From the perspective of humanistic reflection, "human-nonhuman networks" based on deactivation of hierarchical boundary between "humans" and "others" outside the human (such as other creatures, machines, natural environment, and the universe), interaction, and coexistence and symbiosis can be regarded as a form of posthuman when the discussion of postmodernism that criticized anthropocentricism of modern humanism is considered. With these two dimensions intersected and converged, posthumanism here and now is being multilaterally studied and diffused.

Katherine Hayles, who regularized posthumanism debate in 1999 by publishing *How We Became Posthuman*; Gilbert Simondon, a French philosopher who had written *Du mode d'existence des objets techniques* in 1958, when the Internet had not appeared, and has been receiving attention since the 1990s; and Nam June Paik, who had opened a new chapter of media art and techno-aesthetics in the 1960s — all these vanguards, despite historical differences in critical mind and backgrounds in which they came on the scene, are common in that they not only showed an exemplum of convergence encompassing science, technology, philosophy, and art, but also focused on capabilities of cybernetics and information technology to go beyond the limit. If cybernetics discovered a basis on which humans and machines can be seen as the same operating systems, they "moved beyond" cybernetics to seek for possibility of cooperative symbiosis between human beings and non-human beings. Given that artificial intelligence and computer algorithms has dominated posthumanization today, the insights of those pathfinders are significant to search for a balanced direction of posthumanism, not anthropocentricism nor machine-centricism.

## Beyond Cyborg: Thinking about Posthuman

Hans Moravec, the famous robot engineer for Moravec's Paradox,[2] presented a possibility of "mind upload" in his *Mind Children: The Future of Robot and Human Intelligence* in 1990: When bioengineering or computer science technology develop sufficiently,

it would be possible to connect the human brain to a computer directly to transfer the memory in the brain to the computer and vice versa. Like in the movie *Matrix*, you could pilot a helicopter just by downloading the pilotage information into the brain, or in the Japanese animation 攻殻機動隊, *Ghost in the Shell*, you could link the brain to the Internet directly for communication or information search. Mind upload is based on a cybernetic assumption that the way the human brain works is the same as that of the computer. In this context, human intelligence stored in a computer with its biological body abandoned might connect itself to the Internet to become superintelligence, or furthermore, an immortal being.

Hayles criticizes those Moravec's version of cybernetic posthumanism; she argues that posthumanism should be deconstruction of the cogito subject in liberal humanism, autonomy associated with the subject, and free will. Emphasizing the material embodiment irreducible to the abstract, mathematical concept of dematerialized information in cybernetics, she criticizes that Moravek's posthumanism, erasing the embodiment, rather reinforces liberal humanism and anthropocentricism that should be deconstructed. Material embodiment makes it impossible to upload human intelligence into a computer; the embodied nature of human cognition, the condition of embodiment irreducible to non-material data, precludes computerization of human. Unlike computer programs, human thoughts and minds cannot be installed on any computer. Human beings think not only with the brain but also with the sensorimotor body. Human beings make decisions from close interaction of logical and emotional judgments, and feelings and emotions are connected with embodiment and formed from not merely actions of the neurons in the brain but complicated interactions between external environments and the whole body. It is not possible to figure out and encode all those interactions; it is not possible to reduce all thoughts of human linked to embodiment to data through logical calculation. Most human thoughts consist of emotional, physical, and unconscious cognition that cannot be

2 "Hard problems are easy and easy problems are hard." In other words, what human can do easily such as walking or stair-climbing is difficult for robot to do; what robot can do easily such as calculation is difficult for human to do.

converted to language, sign, and code. These un-calculable body language plays an important role in communication. Body language reflects histories of individual organisms, the totality of experiences, and effects of culture and society.

According to Hayles' evolutionary psychological approach, embodiment of intelligent machines is different from that of humans. The human body is a physical structure whose limitations and possibilities have been formed by the history of evolution, a history that is absent in computer. The human consciousness is a property emerging from the embodiment that has been formed by interactions with environments, not logical actions independent from sensorimotor experiences. A cyborg model identifies human subjectivity with consciousness, consciousness with cognition as logical action, and eventually humans with computers. Given that specific differences in embodiment that cannot be abstracted into information pattern, however, "there is a limit to how seamlessly humans can be articulated with intelligent machines."[3] While Moravec claims that protein-based life forms will be replaced with silicon-based ones and humans will soon become old-typed,[4] Hayles argues that being a posthuman is not the end of human species nor computerization of humans, saying that the subject of posthuman is not necessarily cyborg. "It [the posthuman] signals instead the end of a certain conception of the human, a conception that may have applied, at best, to that fraction of humanity who had the wealth, power, and leisure to conceptualize themselves as autonomous beings exercising their will through individual agency and choice. What is lethal is not the posthuman as such but the grafting of the posthuman onto a liberal humanist view of the self. When Moravec imagines "you" choosing to download yourself into a computer, thereby obtaining through technological mastery the ultimate privilege of immortality, he is not abandoning the autonomous liberal subject but is expanding its prerogatives into the realm of the posthuman. Yet the posthuman need not be recuperated back into liberal humanism, nor need it be construed as antihuman."[5]

3 Hayles, N. Katherine, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics*, Chicago; University of Chicago Press, 1999, p. 284.

4 Moravec, Hans, *Mind Children: The Future of Robot and Human Intelligence*, Harvard University Press, 1990, pp. 1-5.

5 Hayles (1999), pp. 286-287.

Criticizing that posthuman is the subject of liberal humanism of disembodied autonomous consciousness, Hayles presented "distributed cognition system" based on embodiment extended by connection of living body and intelligent machine as a model of posthuman subject. Technical dispersion of cognition based on complex computer infrastructure, though without mechanization of the biological body, is sufficient to posthumanize human beings. For Hayles, we have already become posthumans, as the subject of performing distributed cognition that corresponds to extended physical conditions in association with computer machines: the subjects who read paper books and write by hand are different from those who search the information and write texts using computers and smartphones, in terms of sensuous and cognitive actions.

The digital technological environment is obscuring the boundaries between human and nonhuman, giving rise to extended embodiment of human nonhuman unity. Human behaviors consist of much more unconscious than conscious cognition, and the unconscious cognition is considerably affected by the technological environment. Between human evolution and technological development emerge new feedback circuits and extension types; constantly using smartphones and the Internet weakens deep attention and reinforces hyper attention. When reading, people go through the text during multitasking, rather perusing it line by line with care. The biological, technological, and sociocultural effects of smartphones demonstrate how social and neurological co-evolution and mutual reinforcement between technology devices and human beings have developed. These are explained in Hayles' *How We Think* (2012) as "technogenesis."

Mutually cooperative ensemble of human and machine

In the 50s and 60s, when technology was criticized as being opposed to culture, Simondon had already recognized technical objects as not being a simple tool for human convenience but a being having an independent way of existence, claiming cooperative co-evolution of human beings and technical objects. Like Hayles, Simondon also focused on cybernetics and information technology. While Hayles emphasized material embodiment by criticizing dematerialization of cybernetics (or, dematerialized concept of information), however, Simondon criticized identification of living things and machines in

terms of automatic control (i.e., automaticity), trying to put living things and machines in mutual cooperation based on qualitative difference in terms of an open system that is nondeterministic and metastable.

Simondon focused more on how an individual occurs than on an already-configured individual, attempting to prove substantiality of relation rather than structure or shape. All individuals, including living things and machines, are not entities that are hylomorphically constructed but are something metastable occurring through the individuation in relation to environment. The individuation refers to an action of generating an individual while the preindividual reality undergoes phase transition. Nature, which was filled with potentiality before individuation, changes into an ensemble of "individual-associated environment" during individuation. When a supersaturated solution produces crystals, for instance, the solution (preindividual reality—environment) is a storage of potential energy that has not yet been individuated, and the crystals (individuals) melted in the solution are seeds that trigger a new type of crystallization (individuation), carrying potentials of the environment associated with them. Unlike cybernetics, which focuses on the homeostasis, closedness, and autonomy of an individuated system, Simondon's theory of individuation seeks for characteristics of individuals not in closed self-organization but in capacity of communicating with internal and external environments. Every individual co-occurs with its associated environments; the shape and structure of an individual are created through communicating and relating to what have been disparate and uncommunicative. For instance, buds of plant can be embodiment of communication and relations between the solar energy of the macroscopic world and the chemical elements of the microscopic world. The individuals cannot exist on their own, separate from environmental conditions that consist of heterogeneous things such as sunlight and chemical elements. A machine, similarly, does not work on its own; it is associated with technical and natural environments of several elements.

According to Simondon, every individual is a type of transducer, a machine that senses input signals or energy such as heat, sound, and vibration and transforms them into other forms of signals or energy to output. Vacuum tubes and transistors are

typical transducers, machines that amplify or control current. A transducer actualizes potential energy into a different form, mediating and establishing relations between input and output that are heterogeneous and in different dimensions. In relation to environments, living things and machines are common in terms of individuality because both are nondeterministic and metastable open systems and "transducers." However, a machine cannot be identified with a living thing: it is a mere system that the components causally interact with each other within a determined structure and lacks voluntary capacity to produce and communicate information in order to change the structure itself. A machine is able to process given information because it performs works determined by a causal scheme but has no voluntary capability to change its form in order to raise a problem and to find a solution to the problem. "There is no true virtuality in machine; the machine cannot reform its forms in order to solve a problem."[6]

Therefore, human beings as livings things are essential "inventors" and "coordinators" for technical objects because humans enable for technical objects to mutually communicate information and to newly structuralize technical operations. It is "technical human" who transforms the shapes of technical objects and freshly coordinates the relations among the machines when technology evolves from the "elements" of tools to the "individuals" of specified machine and then to the level of the technical "ensemble," networks of machine individuals. Likewise, technical objects create ways of communication and formation of relations at a level corresponding to the shapes and structures of technical objects as mediating transducers between human and nature and between human and human. If it is a labor-centered society that corresponds to the technology of an instrumental level, it is a society that centers on cognitive, inventive technical activities that corresponds to the technology of a level of automated network. Eventually, technical objects and humans are like orchestras and conductors; they build environments that are connected to one another under their own

6 Simondon, Gilbert, *On the Mode of Existence of Technical Objects,* trans. Ccile Malaspina and John Rogove. *Minneapolis; Univocal,* 2017, p. 156.

conditions and co-evolve in order to actualize the potential energy of nature on a mutually cooperative basis.

"Invention" is the evolution of technological objects mediated by humans, at the same time inducing the evolution of human societies mediated by technological objects. Technical objects act as mediators that realize transindividual relations between human individuals. If interindividual relations correspond to social relations among individuals already separated within the established social systems and norms, then the transindividual relations refer to the relations in which solidarity has been recovered in order to solve unsolved problems at a new level by directly communicating preindividual potentials that have inhered in individuals as "weight of nature" through technical objects. These are vividly demonstrated by the Korean citizens holding candles, who have newly grouped to realize emotional solidarity to solve common problems across established social relations (i.e., region, sex, educational years, age, wealth, status) via the Internet and social network devices.[7]

Simondon claimed that whether human beings could exceed physical–biological conditions depends on the existence of "preindividual potential" inherent in human individuals as living things and the technical objects' capability of transduction that communicates it. In the cyborg model, mechanical elements create a human (transhuman) by supplementing insufficiencies or replacing unnecessary parts of human creatures to reinforce specific elements. Simondon viewed, however, that the relation between human and machine is essentially a mutually cooperative ensemble of equal phases, or a relation of "potential energy and transducer of realization." Today's information technology promotes not "working humans" who use technological tools to conquer and control nature but "posthumans doing technological activities" who mutually cooperate with technological ensemble to stabilize relations to the world (i.e., nature and human societies). If the cyborg model aiming at enhancement of human mind and body implies the conquest of human being of nature and the instrumentalization of machines

7 Jaehee Kim, *Simondon's Philosophy of Technology: A Blueprint for PostHuman Society*, Seoul; Acanet, 2017, pp. 148–158.

for human freedom, the human–machine ensemble presented by Simondon diffuses not "domination and subordination but the technological wisdom of "communication and relation control" for coexistence and mutual cooperation" between human and nonhuman.

## Cybernetic tech-aesthetics of Nam June Paik[8]

Seen from Simondon's point of view, Nam June Paik is the most outstanding transducer. He is an inventor, engineer, avant-garde artist, and philosopher, who showed a unique structure in which heterogeneous, disparate, and uncommunicative things can be connected and associated in other dimensions. His works are extraordinary in finding out relations of exquisite internal tension and resonance among "mechanical," "life," and "divine" things that belong to different existences to embody an aesthetic ensemble. In 1964, Nam June Paik and Charlotte Moorman performed Action Music with *Robot K-456*, demonstrating a unique aesthetic charge that combines art and technology, human and machine, and visible actions and invisible melody.

Paik, like Simondon, had worked during the transition from the thermodynamic energy era to the era of electric–electronic technology. He focused on emergence of vacuum tubes, which mediated and regulated two opposing forces, discovering a mechanism of "relation and transduction" within cybernetics. Claiming that "We are in open circuits," he comprehended cybernetics as "discipline of pure relation" and estimated that the field dealt with signals conveying messages and signals not doing it as being equally significant. This evaluation implies non-substantive thought that the meaning itself is nondeterministic and could vary depending on aspect of relations. He thought that the relations generating substance itself is more important than substance as the result of relations. What will become "poison" or "medicine" could depend on how relations among the given things are shaped, controlled, and altered.

Paik's interest in cybernetics is particularly associated with "humanization of technology" strategy. He says: "The real problem of art and technology is not to invent new scientific toys but to find

8 Jaehee Kim (2017), pp. 187–189.

out a way to humanize technology." As can be seen in his robot series and performances, Paik respects differences in human and machine rather than mixes them; he maintains tension and distance of the differences while simultaneously transforming the two into an aesthetic ensemble in open relations. What his tech-aesthetic works implement is a strategy to transduce toxicity of technology that destroys humanity into medicine through artistic practice to discover humane elements within the technology. His attitude is not anthropocentricism nor machine-centricism. He emphasizes control and balance of the relations between human and technology.

In 1964 Paik and Japanese engineer Shuya Abe crafted a robot named K-456. Nineteen years after, in 1982, this "robot" was broken up in the form of a traffic accident on Madison Street, in front of the Whitney Museum of American Art, where a Nam June Paik retrospective was held. There have been a variety of interpretations Paik's works, of course, but what is worthy of notice on this K-456 is that its posthuman form of the "human–machine ensemble." The K-456 is not a closed, automated machine as a finished actuality; it is a technological ensemble that continues to be regulated and reinvented for operation. This robot is meaningful not because it was an automatic machine that "talks, walks, and urinates" like a human being, as said by Paik, but because it was not an independent autonomous substance. It was a robot that could operate only with Paik, who controlled and repaired it with a remote control in his hand. K-456 was a rather true technical individual, not an incomplete robot, in that it "breaks down every few steps, requiring four or five engineers to stick to fixing it all the time." Paik's *Klavier Integral*, a piano equipped with several useless articles, was also not completed by itself but could exist only with visitors who played it during exhibition and Paik as a human being who constantly fixed and replaced the parts damaged by the visitors. The tech-aesthetic objects of Paik are not the materialization of only human things nor of only technical things; they are "human–machine ensembles" that can exist only in processes of transducing, rearranging, and inventing their forms in open relation to the outside.

Nam June Paik's art further unites technology and religion, which conflict with each other, into one. He reads the revolution of vacuum tube as "the Buddhist third way" going beyond the dualistic opposition of strength and weakness. His works such as *TV–Buddha*,

*Electronic Moon*, hanging a blood-dripping cow head, and *Beuys and Shaman*, a gut performance for cherishing Joseph Beuys serve as approaches beyond technology and religion, and approaches to evoke the primordial relations in which human and the world had been magically united before they were separated by technology and religion. Paik's "technology–religious ensemble" restores the primitive universe before human / nature and technology / religion were separated, a universe that is held in "human" and "natural" things that conflict with each other, or "technology" and "divinity." This is why his works are not to express aestheticism within a certain territory of art as an institutionalized genre but to show esthetic senses that touch more fundamental ontological impression.

In Cybernetics Art, Paik declares that he "uses technology to hate technology more appropriately," "You can stop new poison only by using poison which is already inherent," and "Frustration and pain from cyberized life can only be overcome through cyberized shock and catharsis."[9] The technology in what Paik said is like a pharmakon, which means both "poison" and "medicine." This resembles the strategy presented by Derrida, a strategy that makes something deconstruct itself by converting a condition that makes the thing possible into a condition that makes the thing impossible at the same time. By crossing excessive hatred towards technology and excessive faith in technology, Paik uses technology as a medium for "transduction." For instance, what happens when a TV becomes *TV garden* or *TV fish*? Humans have lost contact with nature while watching TV but recall nature they have lost while watching *TV garden*. TV isolates and alienates human from nature, their original foundation, while *TV garden* recovers the lost contact with nature. When TV becomes, technical and natural heterogeneities such as monitors, videos, grass, vines enter into a transductive relation to compose a single ensemble, and its substantiality is elevated from a secular level to an artistic level. Living things, technological devices, and humans who control and invent relations among the two elements and live among them — these three terms are interchanged to create an "ensemble of nature, technology, and human." Paik's

9 Nam June Paik Art Center (ed), *Return of Nam June Paik*, 2009, p. 337

works are technological ensembles of "human–machine" and aesthetic ensemble of "technology–religion." They are technical and aesthetic inventions drawn from the most fundamentally ontological basis. They are new media that create new forms of relations between human and the world. The artistic world of Nam June Paik demonstrating ensembles of nature and humans through technology are valued as a paradigm model displaying the intention point of posthumanity.

## Towards a posthuman society based on ensembles of nature–human–technology

Along with the development of cybernetics and artificial intelligence, the "Algoricene" has emerged at last, surpassing the Anthropocene.[10] In a nutshell, the time has come when everything in the world is coded: even what is qualitative, nondeterministic, or uncomputable is going to be reduced to be something computable, which will be transformed into computerizable data. Making everything into data and algorithm implies an idea that what is irreducible to language and logic of machine should be treated as worthless and deserves to be excluded. This "computer-centricism" is as biased as anthropocentrism because it tries to fit everything into the ways computers operate. It is necessary to respect the values of what cannot be mechanizable or computable and cannot be confined inside the net of algorithm.

As Hales, Simondon, and Nam June Paik have shown up, posthumanism must aim at mutually cooperative co-existence of human beings and nonhuman beings, while alerting to computer-centricism as well as anthropocentrism. But, in order to maintain balanced relations between human, nature, and technology to make a way toward a posthuman society, we should intervene in conditions especially distorting the relations between human and technology. The capability of technology enabling inventive and artistic transduction is no longer purely working; it has been corrupted to be an industrialized technical environment serving

10 The Anthropocene is an epoch dating from the commencement of substantial human impact on the Earth's environments. It is usually considered that the epoch has started with the Industrial Revolution of the 1800s, with soared use of fossil fuel.

categorical imperatives of Capital. When using technical devices within a digital network, we are easy to be captivated by their convenience, but we need to recognize how our desires and thoughts are mediated and coordinated by the technological products. Posthumanism is not realized by technological development itself. It is we, still humans but already posthumans, who should build posthumanism by equipping critical literacy about the techno-capital environments that form our ontological conditions and by constantly adjusting and reconfiguring our relations to the environments.