The Computational Robotic Body through Reasoning of Existential Automaticity⋆

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Abstract. Transhuman does not only refer to people who are experiencing sudden changes right now. Human beings have always agonized over such concerns while evolving with technology. They formed identity in the process of thinking about their relationship with scientific technology. Transhumanism practices existential reasoning of human beings, who are evolving with various cultural and social changes within the environment where the physical and material grounds of humans are changing rapidly. Nature no longer exists as the environment for human evolution. Human beings evolve autonomously in the environment constructed using technology. Human beings evolve in the exo-Darwinian system. From this perspective, Simondon explains a concept that comes from the relationship between technology and culture, called 'automaticity.' He paid attention to the fact that the true automaticity of machines does not relate to the increased automation of physical processes and the intimate combination of machines but to the inclusion of indeterminacy and creation of a network with human beings. His reflection on such sensitivity and automaticity of machines is a valid philosophical approach to robots. The open machine structure refers to the enhancement of automaticity. The automaticity of robots does not enhance exclusive automaticity by confronting human beings. It refers to the evolution of the network structure formed with human beings. We and robots have the respective weight of body-soul, infiltrate into body-soul of one another, influence one another, negotiate, organize, and communicate to produce significance within our network.

Keywords: Posthuman, Simondon, Robotic Body, Automaticity.

1 Introduction

In general, the term 'transhuman' is understood as a 'human being whose bodily and mental functions and abilities have been reinforced through technology [4].' This understanding leads to the idea that 'the advancement of science and technology will bring about the development of human and society, and human beings can simply enjoy such

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advancement.' However, such an understanding of transhuman forces us to examine the relationship between human beings and scientific technology narrowly. This attitude is not very helpful in earnestly examining human beings and the future. The mechanism of the awareness that perceives transhumanism as one of the rosy future of the humankind presented by scientific technology is the effect of technocratic prospects concentrated on scientism on the public image. At the same time, the fixed image of transhuman was produced by human beings of future society shown by popular SF films and literary works, which illustrate people as composite bodies combined with life science, genetic engineering, artificial intelligence, and robotics.

To overcome such misunderstanding, it is necessary to understand transhuman through posthumanism based on philosophical perception. The concept of 'posthumanism' premises a view that the rapid development of scientific technology is creating a milestone for human identity and future society, but this view does not come from the technocratic view [5]. It is the practice of philosophical questioning and reasoning for human beings, who are living in a completely different existential environment from the past because of scientific advancement. In other words, transhumanism is perceived within the world view of posthumanism. Transhumanism practices existential reasoning of human beings, who are evolving with various cultural and social changes within the environment where the physical and material grounds of humans are changing rapidly. When talking about transhuman, it shall have the following meaning. If we were to admit that human beings evolve together with scientific technology, we must think about how our intelligence would evolve while responding actively to realistic problems and maintaining a healthy tension with scientific technology [8].

Transhuman does not only refer to people who are experiencing sudden changes right now. Human beings have always agonized over such concerns while evolving with technology. They formed identity in the process of thinking about their relationship with scientific technology. The prefix trans, meaning the movement of change, is reasonable enough to perceive that human beings had been, currently are, and will continue to be transhuman [7].

2   Development of Philosophical Reasoning of Existential Automaticity

2.1   Evolution – Detachment of Technology and Tool to Save Time

Think from the evolutionary point of view. Imagine the body and threads of a spider spinning a solid web or the sickle-like hands of a mantis. No matter how much we envy and wish to have the architectural technique of spiders that can build a nice web, we cannot have such a body. Our body cannot be like the body of a spider. Biologically, organisms can only evolve to have the excellent architectural technique and thread-weaving body organ of spiders and nimble arms of mantes that can hunt very effectively. We have to retrace and follow the evolutionary time of the two insect species.

However, instead of opting to spend such an evolutionary time and attach such body organs biologically, human beings evolved differently. They evolved by training the method of learning, imitating, and using behavior rather than evolving organs in their

bodies. They chose to keep things 'outside' of the body instead of developing permanent organs 'inside' the body. In place of a body that makes threads by shooting out a sticky liquid, we borrowed materials from animals and plants and used tools to make threads. In place of a body with sharp hands of mantes, we borrowed iron and tin from minerals to make sickles that are as hard as the hands of a mantis. We evolved to make and use tools.

The polar bear is a species that adapted more perfectly than any other organisms in the Arctic. Polar bears gained perfect skin surrounded by thick and long fur to keep the body warm against the cold wind and temperature of the Arctic, but they are forced to stay in the Arctic because of such skin. They cannot take off the fur skin. On the other hand, human beings gave up on the perfect 'clothes' or 'body' made to fit a specific circumstance. People threw away clothes that cannot be taken off once worn and discovered a method of changing the clothing pattern. We became capable of wearing clothes as warm as the skin of polar bears and taking them off as necessary.

All existences, objects, and human beings on the earth have the same age as the earth because they spend the same evolutionary time. During this evolutionary time, human beings observed and imitated all living things and objects in nature, choosing to make, attach, and detach their body on the outside [7]. They found ways to make wheels, musical instruments, scales, and motors. There are no right and wrong in evolutionary time. That is what people did, and the choice has significance.

According to Michel Serres, technology is a tremendous saving of time [10]. It is the nature of technology. Human beings have not spent a long evolutionary time, yet they use the architectural technique and threads of spiders as tools outside their bodies. Instead of spending the time for biological evolution to have arms as sharp and hard as mantes or thick fur skin of polar bears, people built a system of attaching and detaching tools to and from the body. Technology is the saving of time. This definition is simple but philosophical. The birth and use of a tool or technological object mean that human beings have exercised power over the lengthy time of nature to transform and control it. According to Serres, human beings evolve in the exo-Darwinian system [10]. Nature no longer exists as the environment for human evolution. Human beings evolve autonomously in the environment constructed using technology.

However, saving is always double-sided. If resources are reserved and gained in one place, resources are consumed and lost in another place. It is the reason why we need a calm description and approach of our existential relationship with technology, which fundamentally saves time. Although people are living in the era of advanced scientific technology and enjoying the tremendous benefit offered by the saving of time, they are facing the crisis of apocalypse caused by scientific technology. Moreover, technology is not limited to the saving of 'natural' time anymore. Technology is attempting to intervene directly in 'natural' time. We are witnessing the ability of life science, bioengineering, genetic engineering, medical science, and nanotechnology to intervene in the time of nature by getting involved in DNA and biometric system [11].

From this perspective, we confront the computational robotic corpus. In addition to robots that replace human labor, robots that accurately produce automobiles without error, and robots that make clothes, houses, and computers, human beings are evolving together with robots that will fight against cancer cells in their blood vessels and robots

based on artificial intelligence. The reasoning of robots, closely associated with the concept of machine automation, lays over the concept of saving time and the concept of tool detachment system. A robot can execute an optimal process using a body appropriate for process A and easily change its body to fit process B. Whereas traditional robots in the past had difficulties changing their body shape for different processes, robots nowadays can transform by transplanting parts from other robots. Robots have evolved to transcend the saving of time and detachment of tools.

It is necessary to calmly consider whether human labor time saved was spent to enhance the human intuition and insight and what human beings gained or lost in the process of intervening in social and cultural behaviors. The existence of robots, further technologies, must be revealed with the creation of the meaning of such existential network. If the philosophical strategy that we must have when thinking about an AI robot does not start at least from pure naturalism or anthropocentrism, we have to train the said network with a stern yet flexible attitude. We need to consider a network that reasons robots broadly and densely through flexible training of intelligence.

2.2   Body and Soul as an 'Ex-sistence'

The soul of robots is a topic that draws attention when we discuss robots. Literary and philosophical imaginations always pay attention to this topic. Mostly, the topic chases after questions like, 'Are robots becoming humanlike?' To talk about the soul, we have to talk about the body. To talk about the body, we have to talk about the soul. It is so within the relationship of différance, not within the dialectics of dichotomous correlation. By acknowledging this relationship of différance, we can probably follow the thoughts of Jean Luc Nancy about body and soul.

To Nancy, the body is not simply a 'mass.' Since the body includes everything manifested from within, body and soul constitute a tautology to him, unlike the existing efforts to consider the soul to be separate from the body [9]. The soul begins from the body and comes out of it. For the existence of the self, the soul is the body itself and the extension of the body. To Nancy, the body is not enclosed but infiltrated by itself. The reasoning that clarifies between inside and outside cannot explain this relationship between body and soul. The body is not a mass, but the existence perceived. As we sense inside of the body from outside and outside from inside, the term soul refers to the circulation of awareness and perception. Therefore, the soul can be regarded as an alternate name for existence [9], which is associated with the outside generated in the process of infiltrating into one's body from outside and expanding outward from inside. This site is where incorporeity is practiced. Incorporeity refers to the state in which the soul can contact the body at all times. This contact is absolute for both.

To sense is to contact. This contact is the practice of incorporeity and soul mentioned earlier. The body can feel itself to be a body and senses other bodies. The existence is the act of feeling that such a body exists instead of an object. The fact that a body exists is an act of practicing the existence, which is existence that boundlessly goes in and out and ends up being an existence.

The soul is 'sistence' of the body that is placed toward the outside of the body, and "The soul refers to 'exposition' that a body exists toward the expansion and outside. The body is given, presented, and opened toward the outside [9]." The body contacts the

outside and perceives itself as the outside. Through the existence of the outside, the body perceives itself. Within my body, the soul is sensed based on the expansion and exposure of the body. This process is restlessly practiced by the soul and body. We are reasoning body-soul to understand and feel self inevitably within contingency because contingency and inevitability are swirling together in this process. If we close our eyes and feel our bodies, we can feel the complex, puzzling expressions to be existential. If there is a body, there is a soul. The body and soul constantly infiltrate, refer to, and reveal one another while expanding. The question of 'Can robots have a soul like human beings?' simply clarifies the fact that 'Robots do not have a soul similar to human beings because they do not have the same body like human beings.' In other words, we need to recognize the fact that the soul exists in a way different from the anthropocentric world view. Pencils, chairs, and brooms cannot have a human soul, and they do not need one. They have a soul that relates to their body.

In the film 'Her' (2013) [6], the software persona that the protagonist falls in love with is a kind of AI robot. If the man falls in love with this AI robot, feels painful, and longs for her, it is a state that has as much weight of the body and soul within the relationship between humans and software. The same applies to various concerns illustrated by humanlike robots and human beings in many films and novels. The concern for 'Do we have to regard robots to have the same soul as human beings, and how should we confront this situation?' cannot be a keen concern if it revolves within the anthropocentric world view. Properties of technology exist in the network, and this network premises the relationship between body and soul. Reflection on robots is found in the network they form with human beings and is opened by the network of body and soul. We cannot have a mature reflection on robots just by making some frightening scenarios based on a few interesting episodes by obsessing over 'Can robots have the same soul as human beings?'

The philosophical insight that we can gain through the sense of betrayal, loneliness, despair, futility, vain, and longing felt by the protagonist of the film 'Her' (2013) is not about preparing a list of responses to the conventional questions that mimic philosophy, such as 'Can human beings be operated and controlled by machines, robots, and computers?' Doing so is lazy reasoning that comes to a compromise while clearly knowing the fact that this list does not offer anything new. It is an act of snobbism. If our lives are affected by robots and end up facing serious social, economic, and cultural problems, and if we need to respond and reflect on such problems earnestly, we can do so with an attitude of rethinking about the reasoning of body and soul in traditional metaphysics. Instead of lax anthropocentric concerns, we have to spend time on the meaning of network created by infiltrating each other and for the judgment and choice of the existential state. Subtle analysis and discernment of items that belong to the soul, such as internality, autonomy, independence, and creativity, start from such work.

2.3   Understanding Robots Through Cybernetics

The question about the being mode of technologies and human beings can be understood freshly through the concept and reasoning of cybernetics. Cybernetics offers a val-id footing to understand contemporary robots by overcoming the dichotomous boundary among humans, machines, and animals and focusing on their interrelationship. In-stead of

simply regarding human, machine, and animal to be the same things, we need to theorize a complex network of relationships among organic bodies that behave intellectually [14].

The term cybernetics derives from the Greek word 'kybernetes' meaning steersman or pilot. It is comprehended as a word that embraces the human behavior of interacting and sharing active feedbacks with the existential world while controlling and mediating objects. The full title of *Wiener's Cybernetics is Cybernetics or Control and Communication in the Animal and the Machine* [14]. Cybernetics refers to an interdisciplinary research field that perceives self-regulatory systems such as humans, animals, and machines from the perspective of control and communication. The core of cybernetics, which begins from the intersection of mathematics, logic, semiology, physiolgy, biology, sociology, engineering, and philosophy, stresses circular causality instead of lineal causality. The essence of the cybernetic world view is to make us pay attention to the system rather than material-energy reductionism. It focuses on the complex, interactive network and relationship instead of independent entities.

In other words, we take note of a system that undergoes self-organization instead of a system created manually in a predefined way. Therefore, when reasoning robots through cybernetics, we pay attention to the constant feedbacks and interactions between human beings and robots generated on a system of communication and control [15]. Moreover, cybernetics is methodologically more interested in 'how something operates than 'what it is.' As a discipline, cybernetics emphasizes 'how to explore' over 'what to explore.' The important point is that the being that engages in intellectual activities within the system that includes the observer stresses the process of learning and sharing knowledge. Accordingly, the significance of robots in the cybernetic dimension is regulated by the question of how they operate rather than what living things and machines are. Thus, living things and machines have the same status. The beings in the cybernetic dimension are composed of self-generated feedback and recursive circuit which operate within the system of heterogenic beings [15]. The boundary between the machine and human or between the object and living thing is blurred. The cybernetic dimension, a methodology that can reveal the similarity between organic bodies and machines and treat all complex systems scientifically, allows us to consider robots on a different level from the traditional metaphysical methodology. Robots no longer have a relative meaning in their relationship with human beings. Robots and human beings generate non-regulatorily within the network to which they inter-connect and interact at the same time. We can undergo new cognitive training by app- roaching the constant recursive feedback process on the level of communication and control. The so-called 'problem' in the complex contemporary society does not belong to a single domain. We can understand robots within the naturally complex network. We can stop asking the epistemological question, 'Robot, what are you?'

The attempt to overcome the dichotomous boundary of humans, machines, and animals and focus on their interrelationship naturally comes across the process of approaching the human and being through deconstructive reasoning. Just as Derrida's concept of 'différance' attempts to overcome the exclusiveness of being through the interaction and infiltration among beings that are repeated and mediated ceaselessly, the cybernetic philosophy does not regulate deterministic and teleologic beings [2]. The desire to define robots hastily is grown by the habit of traditional awareness. We cannot

solve anything with such a traditional awareness. Communication in the cybernetic dimension does not simply refer to the conscious activities of an individual shared with others. It is crucial to recognize the fact that communication is our environment, middle ground, and complex network of unintentional signals that are already circulating in the social network. Constancy through communication and control is neither a simple balance nor mechanical stability. It shall not be perceived as a state completed possessively. We focus on the very formation of the process.

3   Computational Robotic Body – Implementation of Automaticity

Gilbert Simondon explains that culture comprises a defense system that resists technologies. This defense system is based on the logic that technological objects fail to reflect human relationships and come from domains other than human existence. This premise creates a prejudice against culture. Simondon judges clearly, saying, "The opposition between culture and technology or between human and machine is false and groundless. It is merely concealing ignorance or grudge. Such opposition insists on cheap humanism on the surface while hiding the rich existence with human efforts and natural forces. This existence constitutes the world of technological objects, which are the mediators between nature and human beings [12]." Paradoxically, the distorted view of technocrats is born from such an attitude of concealment and cheap humanism. When the lax humanistic view disables faithful analysis of technological objects, the path to idol worship for technologies that highly evaluate instrumental utility opens up. People who consume lazy humanism have a hostile symbiosis with technocrats. For culture to perform its role properly, it is necessary to incorporate technological objects into humanistic perception and value with a stern and responsible attitude.

Simondon points out contradictions that we neglected so easily and lazily, as much as to seem intentional. According to him, "Culture has a strong attitude of only showing technological objects by the utility as a collection of pure substances without significance, while consistently revealing the aggression and rebellion of robots moved by hostile intention against human beings [12]." These two attitudes are antimonic and contradictory. Technological objects are classified as extremely vulgar beings that do not have any significance other than instrumental utility, but there are concerns and fears about them transcending their existence to gain intelligence and soul and turn human beings into slaves. Simondon stresses that the antimonic coexistence of these two states produces a distorted view of technology and culture.

Simondon explains another concept that comes from the relationship between technology and culture, called 'automaticity.' Simondon showed a progressive and surprising insight on automaticity, considering the technological environment of the time. In general, the degree of mechanical integrity is thought to be proportional to the degree of automaticity. People think that all machines can be connected and combined by increasing and improving automaticity, but Simondon understood that such mechanical automaticity is a low degree of automaticity. He paid attention to the fact that the true automaticity of machines does not relate to the increased automation of physical processes and the intimate combination of machines but to the inclusion of indeterminacy and creation of a network with human beings [13]. In other words, he took notice of the technological

ensemble of controlling indeterminacy of sensitivity sensing indeterminate information of the outer world within the network of human beings and environment, instead of advancing the closed mechanism structuralized by machines. To Simondon, automaticity is an ontological state that materializes the overall harmony of objects, human beings, and the world created by the technological ensemble. His reflection on such sensitivity and automaticity of machines is a valid philosophical approach to robots (computational robotic body).

The increase and enhancement of his true automaticity are related to the increase of indeterminacy, system expansion, and advancement of control. This structure is headed for open machines. The open machine structure refers to the enhancement of automaticity. The signification of the machine and the world is not fixed and severed. The technical understanding of automaticity about responding to, detecting, and communicating with the external stimulus is important. The approach to efficiency of technology and the instrumental relationship must be understood within a larger network, meaning that accompanying risks and problems should be perceived and agonized within a larger framework. The new human role and status become more important. To Simondon, human beings are permanent organizers who realize the ensemble or overall harmony of open machines and living interpreters connecting machines [13]. Indeterminacy possessed by high-level machines demands human beings to boost their attitude toward the connection of information and responsibility and authority for communication. The newer and more intense such role of human beings as permanent organizers or living interpreters, the denser and more expanded is the network formed by human beings and machines. Indeterminacy is also freed, leading to the enhancement of automaticity. The maturity and enhancement of human beings give an impetus to the maturity and enhancement of machines. The ensemble structure of machines is open to the human ensemble.

This unified structure is similar to the body-soul relationship. Consider 'Blade Runner' (1982) [3], a film released about 30 years ago illustrating future society. In this film, the protagonist has a job of discerning cyborgs, which have AI and the same appearance as human beings, from human beings. Cyborgs are living as fugitives because they cannot accept their fate of being discarded at a given date. The protagonist is in charge of arresting cyborgs that are living among people. He is required to distinguish and separate robots from human beings by conducting interviews. As time goes on, robots apply advanced methods to survive. The protagonist also develops his ability to discern robots. However, this process is not only about getting to know robots better but also about getting to know human beings. This situation can be understood using the concept of Simondon. Robots are increasing the degree of freedom and expandability of indeterminacy by learning to assimilate with human beings. It means that the enhancement of automaticity is making progress. The automaticity of robots does not enhance exclusive automaticity by confronting human beings. It refers to the evolution of the network structure formed with human beings. The technological ensemble is constructed while experiencing the complication of meaning and value. The impact of the technological ensemble becomes sophisticated. Robots are not simply capable of copying human souls. The enhancement of automaticity has ended up creating new domains of existence by constantly moving the circuit of mutual corporeality. At the end of the film, robots rescue

the protagonist and choose to be discarded. The conventional humanistic interpretation that 'Robots can have a soul nobler than human beings' seems inappropriate. On the contrary, we prove the fact that human beings must play the role of permanent organizers and interpreters who materialize the ensemble or overall harmony of technological objects. The enhancement of automaticity is open to each other.

4   Conclusion

The modern scientific view of the Western world premises that the dichotomous clarity between mind and body, sense and reason, and body and soul is the grounds for rationality. However, in the reasoning of Nancy and Simondon, nature, machines, and human beings do not have a boundary with clear objective coordinates. They pay attention to the fact that the boundary between the subject and object is always indeterminate and inseparable. Similar to the old animistic world view, they share the point that life is not a simple symbol that must be analyzed. Since long ago, human beings had the dignity of understanding the body and soul as a whole. Body-soul was an existence that produces power for an object to exist as something else and turns the vitality or motion of the existence into the source of its existence. Animism does not easily separate between the symbol and object, me and the world, subject and object, and mind and body.

The reasoning of modern subjects is a concept gained by separating perception and object. If we were to reason indeterminacy and inseparability of existence, we could understand that the subject is merely a provisional being or irregular and ambiguous 'arrangement (agencement, fr)' of disparate elements [1]. In other words, the subject is not an orderly sum of fixed elements but an existence created by the relationship and arrangement of diverse and disparate existences. The animistic world view agrees with such an arranged subject by projecting body-soul onto all objects and existences. The animistic reasoning and world view enable a new approach to existences that were excluded by modern rationalism, giving the power to change the reasoning of hybrid states.

The reason why we need animistic imagination in the process of reasoning robots is that it can be a philosophical practice to overcome the narrow-minded anthropocentric world view through post-metaphysical elements of reasoning instead of embracing it for the diversity of perception. Existential acts on the animistic dimension are neither inferior nor disqualifying. We regard this attitude to be a critical element of the machine-human network. All things are existentially reasonable. We and robots have the respective weight of body-soul, infiltrate into body-soul of one another, influence one another, negotiate, organize, and communicate to produce significance within our network.

Acknowledgment

References

1. Deleuze, G., Guattari, F.: Capitalisme et schizophrénie 2 - Mille plateaux. Critique, Minuit, Paris, France (Oct 1980), in French
2. Derrida, J.: L'écriture et la Différence. Points essais, Points, Paris, France (May 2014), in French
3. Fancher, H., Peoples, D.W., Dick, P.K.: Balde runner. Movie (Jun 1982), directed by Ridley Scott, Produced by The Ladd Company, Filmed at USA and Hong Kong
4. Herbrechter, S.: Posthumanism - A Critical Analysis. Bloomsbury Academic, London, UK, 1st edn. (Aug 2013)
5. Hutchins, E.: Cognition in the Wild. The MIT Press, Cambridge, MA, USA (Aug 1996), `https://www.ebook.de/de/product/3596838/edwin_university_of_california_san_diego_hutchins_cognition_in_the_wild.html`
6. Jonze, S.: Her. Movie (Dec 2013), directed by Spike Jonze, Produced by Annapurna Pictures, Filmed at USA
7. Kim, J.S.: De-metaphysics and De-Dichotomy. Literature & Intelligence, Seoul, Republic of Korea (Jun 1992), in Korean
8. Kim, J.S.: Strong AI and Human. Geulhangari, Seoul, Republic of Korea (Nov 2019), in Korean
9. Nancy, J.L.: Corpus. Suites Sciences Humaines, Mètailiè, Paris, France (2000). https://doi.org/10.3917/meta.nancy.2000.01, in French
10. Picq, P., Serres, M., Vincent, J.D.: Qu'est-ce que l'humain? Le Collège, Le Pommier, Paris, France (Sep 2010), in French
11. Serres, M.: Hominescence. Le grand récit. Essai, Le Pommier, Paris, France (Oct 2015), in French
12. Simondon, G.: Du mode d'existence des objets techniques. Nouvelle édition revue et corrigée, Aubier, Paris, France (Oct 2012), in French
13. Simondon, G.: Sur la technique. Hors collection, puf, Paris, France (Jan 2014), in French
14. Wiener, N.: Cybernetics: Or Control and Communication in the Animal and the Machine. The MIT Press, Cambridge, MA, USA, 2nd edn. (1961)
15. Wiener, N.: The Human Use Of Human Beings: Cybernetics And Society. The Da Capo series in science, Da Capo Press, Boston, MA, USA, new edn. (Mar 1988)