Toward a Decolonizing Approach to Game Studies: Philosophizing Computer Game with BCI

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Abstract. This study presents that the computer game is being philosophized as an object of thoughts that generates a number of philosophical discourses. In order to define the concept of philosophizing computer game, my paper examines *Racing Car Game* with BCI (Brain-Computer Interaction) and reconsiders the rule of the game in the conflict between the game and the narrative. It proposes that the philosophizing computer game with BCI contributes to the decolonizing knowledge enabling new forms of collaborations between sciences, engineering, arts, and design.

Keywords: Decolonizing knowledge · Philosophizing computer game · Brain-Computer Interaction · Rule

1 Introduction

Decolonizing knowledge is an awakening of disciplines. Knowledge is acquired through complex cognitive processes and conducting by correcting and training disciplines. It is justified by a power of theoretical or practical understanding system and can be more or less formal or systematic. To decolonize knowledge of computer game is to invaginate game studies into the ecology of networked knowledge enabling new forms of collaboration between sciences, engineering, arts, and design. It is concerned with both conceptual and methodological strategies aimed at understanding and enhancing the processes and outcomes of collaborative, team-based research.

According to Hannah Arendt's action theory, the knowledge is the way in which we humans produce our means of life. It articulates itself in the mode of performing our life beyond the material and physical one. The knowledge condition is a whole from the perspective of the idea of social relations embodied in the real movement of life [1]. Max Horkheimer and Theodor W. Adorno also meditated the knowledge as the intertwinement of reason and experience in the actual life-process. They point out a paradox of knowledge embracing both enlightenment and myth. The knowledge has the twofold character of enlightenment traversing the universal movement of mind and a nihilistic,

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life-denying power [2].[1] On the one hand, we humans create our own knowledge condition, and on the other, everything we create turns immediately into a condition. This presents that the knowledge condition can be transformed by the performing of the action. Here's the problematic of knowledge of computer game.[2]

Like human-human communication, technology and humans act and react. In particular, computational technology is endowed with highly intelligent and perceptive qualities; has its own laws; and the system itself evolves. With the ability of autonomy and emergence, technology performs the autonomous and emergent action beyond human control. It becomes 'a performer (a collaborator)' collaborating with humans [3]. Technology as a performer (collaborator) transforms the knowledge condition. The transformation, the expanded knowledge conditions by the collaborative action of we humans and technology can be called as "We" human-and-technology [4].[3] The word of "We" human-and-technology indicates that knowledge of we humans is organized by collaborative actions between we humans and technology. "We" human-and-technology is a response to the need for alternative frames of reference to inter-active systems design and alternative ways of understanding the relationships and collaborative actions between humans and new digital technologies [5]. The concept provides a chance to study a growing interest in the philosophizing computer game with interactive technologies.

2 What the Computer Game is Philosophizing

Human-Computer interaction (HCI) techniques evolve from conscious or direct inputs. Especially, the computer game with Brain-Computer Interaction (BCI) shows that the collaborative action of "We" human-and-technology involves both conscious and non-conscious inputs. It expands the collaborative action into a kind of biofeedback. It suggests the brain signal processing as a new way for the collaborative action of "We" human-and-technology.

For example, *Racing Car Game* as an ongoing research-led practice about the computer game design with BCI is constituted by the concentration between human and computer as collaborators (Fig. 1).[4] The brain-computer collaborative action changes the car's velocity; it can improve the attention state; when the collaboration between

[1] Max Horkheimer and Theodor W. Adorno, Dialectic of Enlightenment (California, Standford: Standford University Press, 2002), p. 36.

[2] In this paper, the problem of knowledge reframed by Human-Computer Interaction was originated from my paper. See, Cho, H.K., Yoon, J.S.: Toward a New Design Philosophy of HCI: Knowledge of Collaborative Action of "We" Human-and-Technology, In: Human-Computer Interaction. Human-Centred Design Approaches, Methods, Tools, and Environments. LNCS 8004, pp. 32–40. Springer, Heidelberg (2013).

[3] The concept of "We" human-and-technology was first presented in Cho, H.K.: Aesthetics of "We" human-and-technology. In: ArtsIT 2013. LNICST, vol. 116, pp. 97–104. Springer, Heidelberg (2013).

[4] Game Design with BCI, Brain-Computer Collaborative Action: *Racing Car Game* designed by Bio-Computing Laboratory at GIST, Korea.

human and computer gets stronger, the concentration level goes higher. In *Racing Car Game*, brainwave is the key measure. It represents the concentration as the degree of collaborative action of "We" human-and-technology. Car's velocity shows the concentration level using electroencephalography (EEG).[5]

Fig. 1. *BCI* Game of "We" human-and-technology: Communication without physical and visible movement (*Racing Car Game* Exhibition. EPOC (14-channel wireless EEG system developed by Emotiv Systems) and Carrera Slot Car.).

As a new way of computer game design for "We" human-and-technology, the collaborative action through brain activities allows us a communication without physical and visible movement between human and computer. Brain signals create a new philosophical dimension of computer game design constituted by the collaborative action of "We" human-and-technology.[6]

2.1 Philosophizing Computer Game: Philosophy and Computer Game

Philosophy is not a theory but an activity. Bertrand Russell meditates that the object of philosophy is the logical clarification of thoughts. The result of philosophy is not a number of 'philosophical propositions', but to make propositions clear. It should make clear and delimit sharply the thoughts which otherwise are, as it were, opaque and blurred [6].[7]

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[5] As a research project, *Racing Car Game* is concerning on the aesthetic of art with BCI. See, Cho, H.K., Paik, J.K.: Well-Being of Decolonizing Aesthetics: New Environment of Art with BCI in HCI. In: Human Interface and the Management of Information: Applications and Service, LNCS, vol. 9735, pp. 244–255. Springer, Heidelberg (2016).

[6] The design of HCI with BCI is a part of my research project, "Decolonizing Knowledge: the aesthetic reconstruction of technological experiments." This multi-disciplinary project is to contribute on the networked knowledge between art, design, engineering, and humanity.

[7] Ludwig Wittgenstein, Tractatus Logico-Philosophicus (New York: Routledge, 2005), p. 4.

Today the computer game with BCI is not only as a major media but also as an object of philosophy that generates a number of discourses. It shakes the tradition of Cartesian coordinating system, through the traversing body and mind, reason and sense, the real and the virtual. It asserts the multiplicity of human existence. It maintains that there are other dimensions of human existence.

The philosophizing game with BCI is to define the ontological newness of the computer game. It catches the eloquence missing both fields of philosophy and game studies. More than what it means beyond the philosophy of computer game. The concept indicates that the game is an object of thoughts and consists essentially of elucidations. It involves the rule in order to conduct everything can be thought and said clearly. The rule is a discipline intended to produce a specific characteristic or pattern of behavior and is especially a training that produces moral, physical or mental development towards a particular direction. It implies that the game is philosophizing on two performances making the rule and simultaneously obeying the rule.

2.2 Metaphor Performance: Rule and Use

The metaphor is a crucial point that prescribes the double performance of the rule. In the philosophizing game with BCI, the rule conducts a process of metaphorical thinking. The metaphor comes from the Greek 'metaphora,' in which 'meta' is a tenor (or moving) and 'phora' is a vehicle (or vans). It is a rhetorical trope defined as a comparison (or analogy) for an unrelated object. The tenor is an object being described, and a vehicle is an object borrowing a description. In "Juliet is the sun," Juliet is a tenor and the sun becomes a vehicle. The rule of the game follows the rule of metaphor in which both objects (the user and the game or the user and the selected character) simultaneously must be considered. When a user is playing a game, the user and the game or the user and the selected character also have a mapping of the concepts as a tenor and a vehicle. The rule of the game becomes a metaphor performing an interaction between rules and establishes similarity and difference of objects.

The narrative of the game with BCI is imported by this metaphorical performance of the rule. As a moving van, the metaphor must be found out in a performance of thoughts and events. In other words, the performance of the rule can be considered as the narrative in which series of thoughts and events are involved. For example, the word 'game' is an ambiguous term that the narrative remains inactive. When someone uses the word 'game' as a noun or a verb, it becomes a metaphor that contains a rule of 'similarity and difference' in the performance of thought and events. At this moment, we are locked up in the obscuring story of the word 'game' that needs to be overcome, and the narrative is generated in the performance. In the philosophizing game with BCI, the performance of the rule shows that there is an apparent ontological difference (or a method of existence) between the narrative of the game and the narrative of the literary.

In the case of *Racing Car Game,* the narrative is replaced by the processing of the signal. *Racing Car Game*'s system is implemented under BCI2000 platform (general purpose software in BCI research) (Fig. 2). Graphical software visualizes concentration

index, and hardware module controls the velocity of a racing car. BCI2000 is a general-purpose system for BCI research and development.[8] It can also be used for data acquisition, stimulus presentation, or brain observation applications. BCI2000 consists of a Signal Acquisition module that acquires brain signals from g.USBamp or g.MOBIlab + devices. These raw signals are visualized and stored to disks and submitted to the Signal Processing module. The Signal Processing module extracts signal features and translates them into the device command. Its commands are used by the Applications module to generate collaborative action of human and technology.

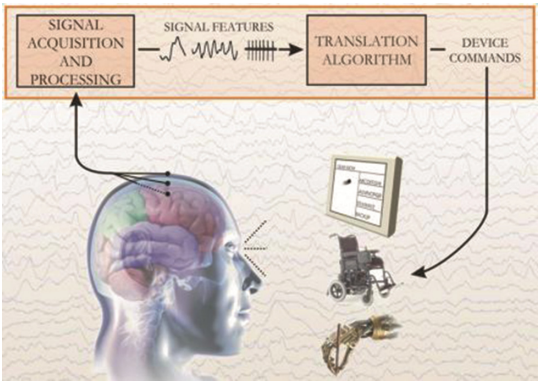

Fig. 2. BCI2000 platform (general purpose software in BCI research) in *Racing Car Game*

As a case of the philosophizing game, *Racing Car Game* presents that the computer game is the moving. The literary work has a fixed story that is written by the author, and the reader reads it. The computer game, however, surely requires the user's action, and the collaborative action of humans and computer even constructs the game itself. Here the interesting point of the philosophizing game with BCI is that we do not just see that things move in the game, but we see them moving in it, and this is because we ourselves move it. In other words, the computer game using BCI technologies is not the still of moving things, but the moving of moving things. It shows that there is no coherent and inherent relevance in the game. Thus, it challenges the way of knowing and decolonizes the power of knowledge system.

Arthur Danto said that "We refer to Voltaire only with reference to why we see the cloud as we do, not with reference to why the cloud is the way we see it." [7][9] The ontological difference (or the existence) is caused by the experience of reality, but causality and reference are in front of undetermined (or being determined) experience. It is not undetermined causality and reference, but veridical experience. The

[8] BCI2000 has been used to replicate or extend current BCI methods in humans and has recently been used in a number of groundbreaking BCI studies. BCI2000 has been in development since 2000 in a collaborative effort led by the Wadsworth Center. BCI2000 is available free of charge for research purposes to academic and educational institutions.

[9] Arthur Danto, "Moving Pictures," Philosophizing Art (California: California University Press, 2001), p. 216.

philosophizing game with BCI presents that we have to question the way of knowing, that is, the rule of the knowledge game.

3 More Than What It Means

3.1 Context

The philosophizing game with BCI reconsiders the conflict between the game and the narrative. What is a real game? What is the narrative of the game? Is it agreed to obey the theory of the literary narrative? For a long time, these questions have been controversial. Especially, in the relationship between the game and the narrative, Narratology and Ludology have different perspectives. The former is based on the traditional narrative theory of the literary while the latter is claimed that the game should not be viewed as an extension of the traditional narrative.

The philosophizing game with BCI reconciles two theoretical frames. On the one hand, it embraces Narratology that is interested in the shows (or traces) of the game. According to Mieke Bal, the narrative contains both an actor and a narrator; it also should contain three distinct levels consisting of the 'text', the 'story', and the 'fabula'; its contents should be a series of connected events caused or experienced by actors [8].[10] As a level of the narrative, the 'text' is a totality of structures with language signs, the 'story' represents the 'fabula,' and the 'fabula' is continuous events with a logical, temporal and historical connection that is caused or experienced by the actor. In short, the narrative of the philosophizing game is a 'series of connected events' caused or experienced by actors' and it requires both an 'actor and a narrator' as a narrative condition.

On the other hand, the philosophizing game concerns Ludology focusing on the rule as a cause and an experience, and the game itself that defines a winner and a loser as the result of it. Hence, the philosophizing game presents that the game produces a sequence of events, but it is not just the narrative that makes a continuous story or a formal development. It has the simulation as a representational and rhetorical tool, which is a way of portraying reality.

The philosophizing game with BCI is an inevitable risk in trying to clarify the potential and synergistic effects of Narratology and Ludology. It reveals that the conflict between the game and the narrative depends upon a 'political pedagogy'; it challenges an academic, scholastic and scientific meaning. Thomas S. Kuhn distinguishes 'context of discovery' from 'context of justification.' How is this distinction mystified? He calls it the "context of pedagogy." [9][11] It is similar to the fact that the Foucault's Pendulum itself represents the scientific and rational reason of human, but the moving earth as an exploring object is full of endless mysteries. It recalls that the knowledge of the game is useful in the classification, but the game always transcends it.

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[10] Mieke Bal, Narratology: Introduction to the Theory of Narrative (Toronto: Toronto University Press, 1985), p. 8.

[11] Thomas S. Kuhn, "Objectivity, Value Judgment, and Theory Choice." In: Arguing about Science. Routledge, New York (2013), p. 74.

3.2 Interpretation

The philosophizing game with BCI presents that there is no distinction between a random and a systematic. The understanding itself is a state using the rule. The problem is not the meaning, but how to use the rule. The correct use of the rule is an important term in Ludwig Wittgenstein's philosophy [10].[12]

Let's consider that a user A and a user B are playing a game of numbers. A has written down numbers 1, 5, 11, 19. After A writes the number 19, B finds out a formula $an = n^2 + n - 1$, and says, "Yes, I know the next number." This process is a perfect imagination. It may be thought to have the narrative and to get hold of the mental process of understanding that seems to be hidden behind the visible accomplishment. We, however, do not succeed in getting the narrative and the mental process. Since, it surely doesn't mean a simple understanding that 'B understands the rule of the series,' and we would have endless questions as a chain of reason that comes to the end; what is the understanding? Why should it be understood?

If there has to be something behind the utterance of a formula, it is a 'particular circumstance' that we are trained to do so. There is no understanding with a mental process that is originated from a pure operation of the body like the sickness. When we are obeying the rule of the philosophizing computer game with BCI, we can have a special experience. But it is also the circumstance under which we had such an experience that justifies us in such a case that we understand and that we know how to go on. This is the reason why we have to call us not the player or the gamer but the 'user'!

Obeying the rule, giving the order and playing the game are merely customs as we are trained to do so. Therefore, there is no place for the narrative in it. If there, however, is something remained, it is not the narrative, but an 'interpretation of the rule.' When we should comment on the situation that someone is playing the game with BCI, the game is translated into a series of actions according to certain rules. In other words, the BCI game procedure is translatable by the rule, since every action of the user is determined by the rule. Thus, the narrative of BCI game is a merely 'surplus of this interpretation.'

Unlike narrative of the literary narrative, the interpretation of the philosophizing game with BCI is endless, and it just merely defines a winner and a loser. Thus, Wittgenstein said that "if we dwell upon the rule, and do try to get beyond it, the difficulty here is: to stop" [11][13].

4 Invagination

The philosophizing computer game with BCI is a 'Don Quixote.' Like Miguel de Cervantes's "Don Quixote De La Mancha" that is the first modern work of literature, the computer game shows us that the rule of similarity and difference makes sport of

[12] Ludwig Wittgenstein, Philosophical Investigations, trans. G. E. M. Anscombe (Oxford: Blackwell, 1953, 2005), pp. 145–155.

[13] Ludwig Wittgenstein, "Following a Rule," In: The Wittgenstein Reader, ed. Anthony Kenny (Oxford: Blackwell, 2006), pp. 99–100.

our reason endless. Today, the computer game breaks off its old kinship with the literary narrative and it exactly marks the point converging madness and imagination. Michel Foucault defines that "The madman brings similitude to the signs that speak it, whereas the poet loads all signs with a resemblance that ultimately erases them." [12][14] The madman and the poet share the rule of the extreme point of our reason.

The philosophizing game with BCI also has an ambivalence of the philosophy and game. The collaborative action of humans and computer involves the decolonizing knowledge. In the philosophizing computer game design with BCI practices, *Racing Car Game*, the collaborative action of "We" human-and-technology becomes an imagination itself. It considers the collaborative action of "We" human-and-technology as both knowledge of practical arts and practical arts themselves. Thus, BCI game constituted by the collaborative action of "We" human-and-technology stimulates a network of conceptual relations rather than merely perceptions of the haptic and sensory aspects of interactive game design.

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