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The Matrix and the Cave: Reconsidering the Ontological Dimension of Education

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The Western theory of education was in its Greek origin inseparably tied to the Greek concept of Being and truth. This is shown clearly by the metaphor of the Cave in the seventh book of Plato's Republic. This interdependence of education (paideia) with Being (which later was identified with Nature or God) has provided, since then, a firm ontological basis for the theory of education. However, with the rise of epistemology in the seventeenth century and the corresponding transformation of ontology (which transformed Being into sense-data or representation), the preoccupation of educational theory began to shift to the reorganization of our representations. Pestalozzi's educational method (Methode) is the classical example of this shift, even though his vision of the world is still impregnated with Platonic-Christian tradition. Now it seems that, with the rise of information technology, which increasingly abolishes the difference between the real and the virtual (this situation can be illustrated through the movie, The Matrix), the modern epistemological tradition, together with Descartes' fear of evil demon, has reached its apex, thus putting an end to the ontological dimension of education altogether.

Taking Heidegger's thought on technology as a guide, we will interpret this shift from ancient ontology to modern epistemology within the context of history of ontology. We will thereby consider the problem of information technology as a fundamentally ontological problem. In order to face the challenge of information technology, philosophy of education must become keenly aware of its ontological background.

1 Introduction

In this paper we would like to reconsider the ontological dimension of education. Ontology is a science especially devoted to considering the sense of Being when we say "something *is* so and so" or "something *is* (*exists*) there"[1]. In so far as the sense of Being determines the sense of reality, we may also say that ontology is the science of the sense of reality.

Now this may sound like pure abstraction, having nothing to do with education which seems to be a down-to-earth business. Indeed, modern educational theory takes the existence of

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things as granted and only considers how to articulate these things through language, or how to manipulate their representations. Thus, from the point of view of modern educational theory, the ontological question concerning the sense of Being, existence, or reality may look like idle speculation.

However, doesn't the simple fact that modern educational theory takes the existence of things for granted indicate the necessity of ontological investigation? As it is a mission of philosophy since Socrates to doubt what is commonly considered to be obvious and to bring the hidden problem to light, asking after the ontological foundation of modern educational theory is not such an extravagant approach as it might initially seem.

There is another factor which makes ontological consideration urgent. The recent spread of information technology is actually undermining the epistemological framework of modern educational theory: that things exist first, followed by their representation and linguistic articulation. We have begun to live in an age in which, instead of knowing the real world through information, information is rapidly replacing reality. In other words, it is information which determines our sense of Being. The challenge of information technology in our age is not simply a challenge of yet another new tool which requires some caution for the users; it is rather a challenge in so far as it puts into question such basic concepts as the world, the nature, the self, the other, and the real. In such a situation, ontological consideration might help us to understand the predicament into which we have fallen.

Our consideration will start from comparing two metaphors. The first metaphor is the famous metaphor of the Cave in Plato's *Republic*. This metaphor, which contains the first systematic treatment of education (*paideia*) in the West, shows how the concept of education was originally tied to the Greek concept of truth and Being.

Compared with this age-old metaphor, the second metaphor may seem somewhat odd. It is the figure of a man controlled by machines in the film *The Matrix*. This metaphor is chosen because it is a perfect representation of the nightmare of modern philosophy which goes back to the evil genius of Descartes[2]. We shall see how this metaphor is tied to ontology which is quite different from the Greek one.

We shall begin our consideration with the second metaphor.

2 The Matrix of Modern Philosophy

In order to understand the situation of the modern mind, imagine the following scene: A man is lying in a vessel which resembles a bath tub. The vessel is filled with viscous liquid, and numerous tubes are injected into his body. Probably some of the tubes are used in order to maintain his life, the rest of the tubes are continuously sending him stimuli. He does not know this situation. His world is within his mind. Through the stimuli his mind creates the virtual world (the Matrix) in which he lives as a program writer for a respectable software company during the day and as a hacker at night. This is *his* reality. He feels some uneasiness with this reality but is unable to escape from it, until one day rescuers come from "the real world". This is a scene at the beginning of the movie, *The Matrix*.

What an extraordinary and strange scene! But this is the situation into which mankind has fallen since modernity.

In seventeen century Europe an intriguing theory was born. According to this theory, the

world we see is nothing but the data projected in our mind through the stimuli of senses. This new theory was developed especially by Locke, who inherited the thought of Descartes and presented it in an empirically more refined manner. To use an excellent metaphor from Richard Rorty, whereas in traditional philosophy the eye could directly watch things outside, in modern philosophy it is the intellect which inspects entities reflected on retinal images[3]. Instead of perceiving the world directly, this new theory insists that one can only know the world outside through the mediation of sense data projected in the mind. This change can be interpreted as a transition from ancient *ontology* to modern *epistemology*. The philosophies of Descartes and Locke are different attempts to show how a man enclosed in the prison of the mind[4] could reach the knowledge of the world outside through carefully examining the inner ideas or representations.

In the eighteenth century this theory developed itself into a more fundamental question of critical philosophy. What if our representations are determined by the framework of our intuition and cognition? Then the world we perceive would be nothing but the fabrication we make out of our sense data. In this case how can we recognize the world as it really is? The world as such becomes the *Ding an sich* and remains eternally unknown to us. This is the problem which is testified by Kant's *Critique of Pure Reason*.

Since then, the modern man has been haunted by the uneasy sense that he cannot escape from the matrix of his mind. This may well be the origin of modern conscience and the obsessive interest in listening to the voice of the other.

Since then, the modern man has been enclosed within himself, and thus finding a way of escape from this prison of the mind became one of the main themes of modern philosophy. We can find this effort already in Kant's second and third *Critique* as well as in different approaches of German Idealism. This effort is also reflected in the strange problem of intersubjectivity which occupied the thought of great thinkers of the last century.

3 The Matrix of Modern Pedagogy

This fundamental change of the constellation concerning the world and man inevitably exercised great influence upon modern pedagogy. The clearest example of it is the fact that the manipulation of intuitions and representations came to occupy the central place in the pedagogical theories of Pestalozzi and Herbart.

For example, according to Pestalozzi, the father of modern pedagogical method, his method was a technique (*Kunst*) which consisted of resolving the intuitions given by Nature into simple elements, and then in reconstructing them into a whole again[5]. This method was used in the education of language, geometry and arithmetic[6]. His famous education of language can be interpreted as the manipulations of intuitions or representations through language.

The fact that Pestalozzi chose geometry and arithmetic together with language as exemplary fields of his method gains special meaning in this context, because it was mathematics which played a significant role in modern epistemology. See for example the epistemology of Descartes which was developed in his *Regulae ad directionem ingenii* (*Rules for the Direction of the Understanding*). Of course it was not the first time that mathematics had become a preferred model of science. As it is well known, this age-old discipline had occupied a privileged place within the sciences since Antiquity. However, we should not forget that the privilege of mathematics since Antiquity had been founded upon Platonic ontology according to which numbers, being closely

related with Platonic ideas, were principal components of the world. In the modern age, on the contrary, it was the manipulative aspects of figures and numbers that obtained special importance for epistemology. The certitude of mathematics lies not in the fact that figures and numbers have a special ontological status but in the fact that they are under perfect control of human manipulation[7]. We can be certain of mathematical truth because we can always derive it by dividing and adding figures and numbers[8]. This exemplary role of mathematics within modern epistemology is also reflected in the modern pedagogy of Pestalozzi and Herbart.

Before continuing with this discussion, I would like to make two short comments on modern pedagogy. First, in our age, modern pedagogy is not the monopoly of the West. Like modern technology or modern science, modern pedagogy has spread to the countries in process of modernization, replacing thereby the older form of teaching and learning. In Japan the pedagogy of Pestalozzi and Herbart was introduced in the Meiji period (1868-1912). An older form of education cultivated in the Edo period (1803-1867), which consisted mainly of the recitation and memorization of classical Confucian texts[9], was replaced by new methods developed by the followers of Pestalozzi and Herbart.

Second, modern pedagogy is intrinsically related to a form of power which Foucault called 'disciplinary'[10]. The method of modern pedagogy, which divides a given subject into basic elements and then synthesizes them into a whole, enabled the development of curriculum systems with unprecedented complexity and sophistication. In pre-modern pedagogy, such as it was found during the Middle Ages, the Renaissance in Europe or in the Edo period in Japan, there was no strict distinction of grades, and pupils of different ages often attended the same class[11]. The curriculum system of modern pedagogy, on the other hand, has enabled the detailed inspection of the academic achievement of every single student. This inspection not only provides new materials for modern pedagogy but also helps the establishment of disciplinary control of pupils, thus helping to create a new form of subjectivity and a new form of body[12].

4 The Ontology of the Cave

Using the metaphor of the Matrix as our guide, we have delineated some essential features of modern epistemology. This epistemology, which liquefies things into inner ideas or representations, served as the theoretical background of modern pedagogy. However, we should not forget that within the educational theories of Pestalozzi and Herbart, for example, we can still find such concepts as Nature or the Real, which they inherited from classical philosophy. It is these age-old concepts which prevented the pedagogy of Pestalozzi and Herbart from falling into a mere technique of manipulating representations. Where, then, do such concepts come from and what kind of role did they play for education originally? These concepts, which were transmitted to the modern age through Stoicism and Neo-Platonism, have their origin in the thought of Plato. This can be shown through an examination of the famous metaphor of the Cave.

The metaphor of the Cave in the seventh Book of the *Republic* (514A-521B) concerns the *paideia*. This famous metaphor describes liberation of a prisoner. He was accustomed to seeing shadows reflected upon a wall in the darkest corner of a cave. His liberation begins through his conversion (*epitrophe*) toward the light and the gradual habituation of his eyes to see the light. Liberation is completed when he goes out of the cave and sees the sun. The sun, through which everything grows and by which things can also be seen, is the symbol of the Idea of the Good

which is the ultimate cause of Being and knowledge.

At first glance, this metaphor of the Cave may seem similar to, or almost identical with, the metaphor of the Matrix. For in both metaphors man is a captive within a false world[13]. However, this similarity should not cover the fundamental difference between them. In the Cave, the sun's light (which is the symbol of truth) penetrates into the darkest corner of the Cave. It is also contained within the eyes of the prisoner and enables his sight. Here truth is not property of human judgment and proposition as modern philosophy proposed. It is rather the case that *man stands within truth*. It is this Greek experience of truth which makes *paideia* as the conversion toward truth possible. This conversion takes place through different stages accompanied by always increasing degrees of truth and Being. (Interestingly the Greek uses here the comparative for "true" and "being", which is unthinkable for the modern mind). At the end of this journey comes the ultimate revelation of the sun, which is the origin of every truth and Being. Thus, the Platonic *paideia* is only possible upon the foundation of the Greek experience of truth and Being.

In the movie, *The Matrix*, on the contrary, man is enclosed within a virtual world. There, through stimuli controlled by machines, man is led to believe that he lives in the world of the late twentieth century, whereas in reality he lives in a later age controlled by machines. This virtual world has some similarity with the real world. However, there are no gradual steps which enable the transference from the virtual to the real world. The gap between the two worlds is essentially insurmountable.

5 The Cave and the Ontological Foundation of *Paideia*

The difference between the Cave and the Matrix has special significance with regard to education.

In the world of the Matrix, reality is nothing but the data given to the human mind. One may gather and arrange these data meticulously. And education, we may infer, may help to do this. However, one can never go outside of this prison of the mind. No wonder that in the movie salvation comes from outside, through a kind of *deus ex machina*. The protagonist of the movie, Neo, succeeds in escaping from the virtual world of the Matrix only through the help of Morpheus and Trinity, who have come from "the real world" to rescue him. But this salvation is possible only because Neo is "the One", the chosen. Moreover the escape takes place through swallowing a red pill that brings Neo's consciousness to the real world. To take this leap Neo had to trust the voice of those who presumably came from the other world. In this sense, Neo's decision is similar to that of believers in a religious cult. It is a *salto mortale* based on the dissatisfaction with the world one lives in and the blind belief in a guru who presents himself as a savior. There is no gradual process of education or learning which might liberate man from the virtual world.

In the world of the Cave, on the contrary, education consists of the gradual process of accustoming oneself to the light of truth, which becomes brighter as one proceeds. From the point of view of modern pedagogy we may be tempted to call this process the first theory of curriculum in the West. Certainly, the series of steps of learning introduced there to orient and accustom the mind toward light, namely arithmetic, geometry, music, astronomy and dialectics[14], may be called the Platonic curriculum, which reflects the actual teaching at the Academy. However, one should not forget that this Platonic curriculum was not based on the arrangement of intuitions and representations as modern pedagogy maintains. Rather, it was based on the Greek experience of truth

and Being, which is very different from the modern one.

Let us sum up the main features of this Greek experience once more:

1) Truth and Being do not reside within our judgment and propositions but precede them both. Their overall penetration composes the world.
2) This penetration is not homogeneous, but forms a continuous whole, which, starting from the ultimate origin of truth and Being (the sun), goes through things showing different degrees of truth and Being and eventually reaches the stage of their lowest degree. The Cave is the perfect metaphor of this continuous whole.
3) The light of truth resides in each human soul. Human nature consists of this special relatedness with truth and Being. As the *Phaedrus* (250A) shows, only those souls which have seen the Platonic Ideas before birth are permitted to dwell in a human body. The famous theory of recollection in the *Meno* (82B-86C), a favorite theme of historians of education, is also grounded upon this ontology of the human[15].
4) It is this understanding of the human which enables the Platonic *paideia*.

6 A Comparison with Confucianism

Before proceeding further, I would like to remark briefly on the status of this Greek experience. This Greek experience, strange as it may seem to the modern mind, seems to have a great deal of affinity with much of the experience of the so-called axial-age civilizations. For example, the first lines of *Chung-yung*, one of the canons of Confucianism, may be fruitfully compared with the Platonic metaphor of the Cave. It reads as follows:

> What Heaven imparts to Man is called Nature. To follow Nature is called the Way. Cultivating the Way is called Teaching[16].

Just as the man in the Cave is gifted with the light which enables him to start the gradual search for the sun, so is man, according to Confucianism, gifted with Nature which is imparted from Heaven. Moreover, Confucian education consists of following of this Nature. The *Great Learning*, another influential canon of Confucianism, describes this process as the gradual overcoming of the small self and the identification with the greater self, such as family, country and Heaven[17].

This similarity, of course, should not be used to cover up some of the basic differences between East and West. For example, whereas in the West fundamental concepts are “Being” or “Truth”, in the East they are “Heaven” (Confucianism), “Void” (Taoism), or “Nothingness” (Buddhism). However, I would still argue that the experiences of the axial-age civilizations have common features, in so far as they all tend to place man into a larger context (whatever may be its name) which has *depth* and thus tends to prevent man from enclosing himself in the isolated world of the mind. This may point to the importance of inter-religious and inter-civilizational dialogue for the future study of education.

7 The History of Education seen from the History of Being: The Significance of the Heideggerian Theory of *techne*

I have tried to elucidate the differences between ancient and modern education through the contrast between two metaphors. This difference is deeply connected with the difference of how one understands Being as such. For modern philosophy and pedagogy Being is just one of the features belonging to our judgment and language. The Platonic concept of *paideia*, on the contrary, is based on the experience of Being which precedes judgment and language and which admits different degrees.

To read history from the ontological point of view is, of course, not my own invention. It was already proposed in 1926 with the publication of Heidegger's monumental work, *Sein und Zeit* (*Being and Time*). In this book Heidegger, who had learned phenomenology from Husserl, objected to the fact that the concept of Being, which is the ultimate phenomenon for him, had long remained unquestioned by philosophers. Therefore, he proposed to revive the question concerning the sense of Being, which, after its first appearance in ancient Greece, had been almost completely forgotten.

What significance does the Heideggerian approach have for the history of education? Especially important for our investigation are the following two points.

The first involves Heidegger's interpretation of the metaphor of the Cave in *Platons Lehre von der Wahrheit* (*Plato's Teaching of Truth*). This interpretation invites us to see Platonic *paideia* within the context of Greek ontology. Our interpretation of the metaphor of the Cave owes much to Heidegger.

Second, but no less important for our investigation, is Heidegger's thought on *Technik*, which can be translated as art, craft, technique, or even technology. We will translate it as technique or technology according to context. But it is important to keep its wide range of meaning in mind. His thought on technique not only helps us to understand modern epistemology, which is closely related to technology, but it can also offer an interesting interpretation of modern pedagogy that is considered *Kunst*, art or technique.

Heidegger discusses technique in his later works. We will follow his discussion in *Die Frage nach der Technik* (*The Question concerning Technology*)[18]. The main feature of his discussion is that it is neither a mere theory of art nor simply a criticism of technology. Rather, it tries to reveal the ontological horizon of modern technology[19].

Modern science, according to Heidegger, "sets" powers of nature as a computable whole[20]. This is why experiment plays such an important role. In other words, in modern science nature is presented as something verifiable through computation. As such, nature can be presented as a system of information. This interpretation of nature through modern science is possible because the essence of modern science lies in technique or technology. This sounds paradoxical at first glance, because modern science was established two centuries before modern technology, and modern technology may seem to be a mere application of modern science for the use of industry. However, this interpretation is superficial. It is rather the case that the method of modern science which sees the world as an assembly of powers or information that can be computed and controlled is itself quite technical.

In an age dominated by modern science, a thing begins to lose its qualification as an object and becomes something set (*gestellt*) by man. This makes man the ruler of the world, in which ironically man can only encounter himself[21]. Heidegger names the ontology of the modern science

which created this situation with a newly coined word, *Ge-stell*. According to the ontology of the *Ge-stell*, a thing is neither an independently existing entity, nor an object with relative degree of independence against a subject. A thing is nothing but information or data made and controlled by man.

The characteristics of the modern science and technology together with the underlying ontology of *Ge-stell* can be elucidated through the comparison with Greek *techne* and its underlying ontology[22]. Heidegger understands Greek techne as *poiesis* which leads non-Being into Being. This understanding of *techne* is intertwined with the Greek experience of truth, which as *a-letheia* brings what is hidden into the light of Being. *Techne* as *poiesis* brings what is hidden into the light of Being. It is against this background that we can understand why for Plato *techne* has a close relationship with the Platonic Ideas. The Platonic Ideas, unlike the ideas of modern epistemology, do not reside in the mind, but have special ontological status and are placed outside of mind. *Techne* is capable of revealing these Ideas which are normally hidden to mankind. Modern technology, on the contrary, has rejected this experience of truth, and instead of presenting things as they really are it dissolves things into computable data.

Heidegger's thought on *Ge-stell* shows that the contemporary dissemination of information technology only completes the process which was set forth by modern science and technology. The world of the Matrix is the fulfillment of the Cartesian dream or nightmare. Whereas modern philosophy, despite its close relatedness with modern science and technology, could not eliminate the pre-modern heritages such as the concept of God or Nature, contemporary information technology severs the tie with reality outside us and liquefies the world into eddies of information. Heidegger's thought helps us to see the problem of modern technology as the problem of ontology seen in a larger context of history since ancient Greece.

Heidegger's thought on *Ge-stell* also challenges the philosophy of education since modern pedagogy itself is understood as *Kunst*. This technical aspect of education has dominated modern educational methods and is now flourishing even more by the introduction of computers into the classroom. However, the rapid spread of information technology has made the relationship with reality outside, which modern pedagogy has taken for granted, into a riddle. The age in which information was considered to be a reflection of outside reality is already beginning to wane. In our age information is rapidly replacing what was once called reality. Think, for example, of the international trade of money, stocks and bonds, in which large amounts of money circulate through the click of a mouse. Or ponder the spreading of rumors in a computer network such that it influences the actual course of business and politics.

Domination of *Ge-stell* will be complete when man encloses himself within the world of information in which man meets only himself. In such a situation it would not help much to advise people to choose accurate information to know the so-called fact. For in an age dominated by information technology it would not be a fact which determines the truth of information but information which makes a fact. In facing such a situation, what does it mean to educate, and what kind of proposal can philosophy of education offer?

8 Significance of Ontology for Philosophy of Education Today

Information technology is a challenge to philosophy of education, in so far as it threatens the dualism that most modern pedagogy has taken for granted.

As described above, the pride of modern pedagogy lies in the efficient manipulation of inner data, which are variously called ideas, concepts, intuitions, and representations. Seen from this point of view, information technology seems to offer a strong tool to modern pedagogy. However, in order to avoid being a mere technique of manipulation, modern pedagogy had to inherit from traditional ontology or metaphysics[23] those concepts such as God, Nature or the Real, which, lying outside of our subjectivity, assure that the manipulation of the inner data correspond to reality. In modern philosophy, Descartes had to introduce the theory of benevolent God (a modern version of Plato's Idea of the Good) to assure that the inner ideas when rightly examined will provide us knowledge of the outer world. Correspondingly, in modern pedagogy, Pestalozzi's theory of *die Methode* as pedagogical manipulation of ideas was compelled to take the existence of God and Nature as granted. Without introducing these concepts, modern pedagogy would have fallen into sheer indoctrination.

However, this dualism between modern epistemology and traditional metaphysics has been full of tension and potential contradiction. For, if we follow the path of modern epistemology according to its premises, we cannot venture outside of the framework of our cognition. Thus, the distinction between the real and virtual, between what is and what is made becomes blurred. We are forever enclosed within the Matrix of the *Ge-stell*.

It seems that modern pedagogy has not thought through this problem, and as a result, it contains within itself a peculiar mixture of technical manipulation and traditional ideals.

Information technology provides us with opportunities, in so far as it threatens to shatter the dualism of modern pedagogy and forces us to think more thoroughly about the problem of the *Ge-stell*.

Philosophy of education must respond to this challenge sincerely and with radical thinking. Radical thinking requires that we should not look for quick answers and an easy remedies, choosing, for example, one of the alternatives of the duality: either to accept the standpoint of modern epistemology in its entirety, transforming everything into the product of one's mind, just as in ancient mythology when King Minos transformed everything he touched into gold and thus starved to death; or, on the contrary, to accept the standpoint of traditional metaphysics in a fundamentalist and authoritarian manner, trying to deduce moral principles from the presumably highest principles. Instead of searching for a quick answer, radical thinking should look for the roots of the matter and take fundamental questions seriously. To such fundamental questions belongs the question of ontology: What is Reality?

This question is far from being an abstract question for leisured philosophers. It is a concrete question, the imminence of which is gradually being revealed through the challenge of information technology[24].

Notes

1 Here "the sense of Being" is the translation of "der Sinn vom Sein" of Martin Heidegger. The "Sinn" means here the horizon in which something such as Being is understood. See Martin Heidegger, *Sein und Zeit*, vierzehnte, durchgesehene Auflage, Tübingen: Max Niemeyer Verlag, 1977, pp.148-153.

2 The affinity between *The Matrix* and Cartesian philosophy did not escape the notice of the critics. See William Irwin (ed.), *The Matrix and Philosophy. Welcome to the Desert of the Real*, Chicago and La Salle, Illinois: Open Court, 2002 ; Mark Rowlands, *The Philosopher at the End of the Universe. Philosophy Explained through Science Fiction Films*, New York: St, Martin's Press, 2004, pp.27-56; William Irwin (ed.), *More Matrix and Philosophy. Revolutions and Reloaded Decoded*, Chicago and La Salle, Illinois: Open Court, 2005.

3 Richard Rorty, *Philosophy and the Mirror of Nature*, Princeton: Princeton University Press, 1981, p.45.

4 See Hannah Arendt, *The Human Condition*, Chicago: University of Chicago Press, 1989, p.288: "the world of the experiment seems always capable of becoming a man-made reality, and this, while it may increase man's power of mak-

ing and acting, even of creating a world, far beyond what any previous age dared to imagine in dream and phantasy, unfortunately puts man back once more - and now even more forcefully - into the prison of his own mind, into the limitations of patterns he himself created."

5 *Sämtliche Werke*, Band 13, Berlin und Leipzig: Verlag von Walter de Gruyter & Co., 1932, p.279.

6 *Sämtliche Werke*, Band 13, pp.259-304.

7 "When Descartes' analytical geometry treated space and extension, the *res extensa* of nature and the world, so "that its relations, however complicated, must always be expressible in algebraic formulae," mathematics succeeded in reducing and translating all that man is not into patterns which are identical with human, mental structures." (H. Arendt, *The Human Condition*, p.266.)

8 See Thomas Hobbes, *De homine* in *Opera philosophica, quae latine scripsit, omnia*, vol. II, Bristol: Thoemmes Press, 1999, pp.93-94; Thomas Hobbes, *Six Lessons to the Professors of the Mathematics*, in *The English Works of Thomas Hobbes of Malmesbury*, vol. VII, ed. by Sir William Molesworth, London, Aalen: Scientia, 1962, pp.183ff. On the relationship between cognition and making in modern thinking before Giambattista Vico, see Rodolfo Mondolfo, *Il 《verum - factum》 prima di Vico*, Napoli: Guida Editori, 1969.

9 See Masashi Tsujimoto, *"Manabi" no hukken* (*Restauration of "learning"*), Tokyo: Kadokawashoten, 1999, pp.51-85.

10 See Michel Foucault, *Surveiller et punir*, Paris: Gallimard, 1975.

11 See Tsujimoto, op. cit. pp.18-49.

12 In Japan, which experienced rapid modernization, this change is probably more obvious than in the West. For example, in the Edo period the way of walking called "namba", namely walking with a similar movement of the right arm and the right leg, was quite common. After the Meiji period this way of walking became the object of correction. It is only recently that some people have begun to defend the "namba" and to introduce it into some sport activities.

13 This similarity between the Matrix and the Cave did not escape the notice of the philosophical discussions about *The Matrix*. However, these discussions completely overlook the fundamental difference between the two metaphors, which we are going to reveal. See William Irwin (ed.), *The Matrix and Philosophy. Welcome to the Desert of the Real* and William Irwin (ed.), *More Matrix and Philosophy. Revolutions and Reloaded Decoded.*

14 *Republic* 521C-535A.

15 The term "ontology of the human" is taken from Charles Taylor, *Sources of the Self*, Cambridge, Massachusetts: Harvard University Press, 1989, p.5.

16 For the interpretation of *Chung-yung* see Tu Wei-ming, *Centrality and Comonality: An Essay of Confucian Religiousness*, Albany: State University of New York Press, 1989. The translation of *Chung-yung* is also taken from this book with some modification. Tu translated the Chinese term, *hsing*, as "human nature", whereas we translate it more literally as "Nature". And we use majuscule letters for "Man" and "Teaching".

17 This interpretation owes much to Professor Tu Wei-ming's lecture at Tohoku University on June 24, 2005, "Education as Embodying Humanity".

18 Martin Heidegger, *Die Frage nach der Technik*, in M. Heidegger, *Vorträge und Aufsätze*, vierte Auflage, Neske, Pfullingen, 1978, pp.9-40.

19 Gianni Vattimo offers a series of stimulating discussions of the Heideggerian concept of *Technik* and interprets it as one of the key-concepts to understand the status of information technology in postmodern society. See Gianni Vattimo, *La società trasparente*, la nuova edizione accresciuta, Milano: Garzanti, 2000. Our interpretation is less optimistic than that of Vattimo. About the relevance of the Heideggerian theory of technology to education and information technology see Takashi Otani, "A Discussion on Education and Information Technology: Based on Martin Heidegger's "The Question Concerning Technology"" (in Japanese), *The Japanese Journal of Educational Research*, vol. 73, No. 2, 2006, pp.110-124.

20 For the following argument see *Die Frage nach der Technik*, pp.23-31.

21 See *Die Frage nach der Technik*, p. 31. This expression is borrowed by Heidegger from Werner Heisenberg, "Das Naturbild in der heutigen Physik" in *Die Künste im technischen Zeitalter*, München: R. Piper, 1954, pp.60ff. Hannah Arendt also refers to the same expression of Heisenberg in *The Human Condition*, p.261.

22 See *Die Frage nach der Technik*, pp.14-16.

23 Following Heidegger, we take metaphysics as a form of ontology which identifies the highest Being with God. This originates from the philosophy of Aristotle. The metaphor of the Cave we considered certainly exerted great influence on the tradition of metaphysics. However it should not be identified completely with later tradition.

24 Earlier versions of this paper were read at Gregynog (Wales) and Sendai (Japan). I am very grateful to those who participated in those discussions, especially to Paul Standish and Nahum Chandler.