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The Interpretation of an Ancient Learning Concept

in the Light of Adaptivity to Communication Technologies

Theses of Doctoral (PhD) Dissertation

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Dissertation Topic

After completing my graduate studies in History at the Faculty of Humanities at the University of Pécs in 2010, I explored how portfolio can be used as a method of development in history learning and teaching in response to the cognitive revolution. Therefore, in the theoretical framework of my thesis I introduced a popular constructivist didactic typology (*Nahalka* 1997/2, 21-33, *Nahalka* 1998, 117-158, *Nahalka* 2002, 33-49). I was concerned that constructivist didactics, which are the cognitive basis of the portfolio method, offer a better opportunity than the learning conceptions of previous historical periods. According to this typology, a process of development can be outlined from antiquity to the present, of which didactics have always sought to surpass the former in various ways.

Given the wide acceptance of the proliferation of computers, that is, the context between the cognitive revolution and the constructivist concept of learning today, why not to presume a connection between the adaptivity to pre-computer communication technologies and earlier learning concepts? Derived from this idea, the question of how adaptivity to the phonetic alphabet might have influenced ancient learning theories emerged. To what extent has adaptivity to book printing changed previous knowledge and learning theories and the way in which they were interpreted? What led to the consequence that knowledge was not originated directly from the soul but indirectly from an outside the cognitive mind in the Gutenberg Galaxy?

In the light of the questions raised, this doctoral dissertation aims to point out that the concept of learning is in constant change, depending on its adaptivity to communication technologies from antiquity to the present day. For this reason, I assume that the engine of change is not driven by the pursuit of quality development, but by a different interpretation of the relationship between the cognitive mind and the outside world. Namely, the adaptivity to the phonetic alphabet entailed the possibility of separation of the subject and the object, the question of how the mind could be aware of the outside world may have arisen at all, resulting in paradigm shifts.

A historical approach to the problem of adaptation introduces the role of adaptivity to the phonetic alphabet in the formation of the Platonic Idea Theory, which sees the world as an issue that can be grasped by perception and intellect, and formation of the Anamnesis Theory that bridges the two. As paradigm shifts not only change theories of knowledge and learning, but

also results the former concepts to appear in different colors, the research focuses on how adaptivity to book printing influences the modern interpretation of Plato's learning theory.

Motivation behind the Choice of Topic

As research has shown that adaptivity to communication technologies played a major role in these paradigm shifts, the mapping of this influencing factor fills a gap. In this problem-historical approach, didactics are equivalent because the creators of learning theories had to respond to different challenges at all historical times. In particular, the research is constructed as a *'problem-historical node'* (*Kéri* 2001, 7 and 28) on the challenge of the adaptivity to phonetic alphabet, book printing, motion picture, and computerism.

Nevertheless, the assumption of quality development from the antiquity to the present is generally accepted in relation to the concept of learning. Given that this typology is included in the university textbook 'Didactics' edited by Iván Falus and has been heavily relied on in teacher education since its publication in 1998, it may be a widespread approach. In contrast, according to this study, it should be borne in mind that learning concepts are pronouncedly interacted to the adaptivity to communication technology in the given period. For this reason, it is not advisable to think in terms of quality development, only in the historical alternation of communication technologies, epistemological paradigms and learning concepts.

Since the doctoral dissertation seeks to eliminate a generalization, it does not attempt to comprehensively explore the concept of learning from different eras arised from 'problem-historical node', but rather to reconstruct Plato's theory of learning and present its modern interpretation.

The Key Concepts of the Research

Since key concepts can have multiple meanings and can be used in different ways by each researcher, I have sought to accurately define recurring terms. As the research is organized around the change of the concept of learning, this key concept plays a prominent role in the doctoral dissertation. In constructivist didactic typology we can also find this expression (*Nahalka* 2002, 33 and 45), by which it can be understood how the act of learning was perceived and interpreted in certain historical periods. This is also relevant because didactics are appropriately selected in historical reviews from antiquity to the present (*Nahalka* 2002, 33). In contrast, I call the didactic ideas of some authors, such as Plato, the theory of learning. I

identify the concept of learning as the totality of learning theories represented by different thinkers.

In the course of the research, I assume that in the induction of paradigm shifts closely related to the changes in epistemology and the concept of learning, adaptivity to the technology of mediated communication has acted as a catalyst, of which certain stages are distinguishable. Accordingly, the phonetic alphabet became activated in the Western culture in the 5th century BC, book printing in the 15th century, motion picture in the 19th-20th centuries, as well as computerization in the middle of 20th century; collectively, I call the above mentioned communication technologies. The attribution they have in common is that they make a great influence on the relationship between the cognitive mind and the outside world.

By paradigm shift, the change of the sensory-interpretive frameworks that result from adapting to technological changes that eliminate the directness of communication has to be meant. While in the works Darwin, adapting to changed living conditions has arisen in relation to wildlife (*Darwin* 2000, 59), Jean Piaget has extended Darwinian adaptivity to mental processes (*Piaget* 1970, 370). Unlike the above, adaptivity in human cognition means adapting to the changed conditions resulting from the sustained use of communication technologies, whereby perception and thinking change.

The Aim of the Research

According to Marshall McLuhan's Gutenberg Galaxy, adaptivity to communication technologies for mediation has greatly transformed human perception and thinking, so I assume that this change from sustained use of devices has triggered a chain reaction in knowledge and learning theories. In fact, along with adaptivity to phonetic alphabet, book printing, motion picture and computerization, there have been parallel scientific paradigm shifts under the name of Thomas Kuhn, which have changed the concepts used in connection with cognition and learning as well as the assessment of the prophylactic ideas.

According to McLuhan's theory, due to the transformation of perception and thinking in historical periods, adaptivity to the communication technology of that period may have played a decisive role in the formation of various epistemological paradigms (*McLuhan* 2001, 36). According to Nahalka's didactic theory, learning concepts may change from time to time according to the expectations of the current paradigm (*Nahalka* 1998, 121 and 130-131). Measuring the two theories, the question arises whether the paradigm shift in knowledge and

learning theory is due to adaptivity to communication technologies. Accordingly, the aim of the research is, as a first step, to explore, through a comparison, the effects of adaptivity to phonetic alphabet, book printing, motion picture, and computerization on changes in learning perceptions.

Since the constructivist didactic typology outlined a process of development between the ancient-medieval and modern knowledge constructed by the concept of learning (*Nahalka* 1998, 120), the research assumes that paradigms tend to seek self-justification anachronistically to exceed prior learning theories. Secondly, the aim of the research is to examine whether the perceived quality difference between the learning conceptions of different eras proves to be right in the light of adaptivity to communication technologies.

After comparing the concepts of learning from different periods along the "problem-historical node" of adaptability, the third step of the research is to explore the implications of adaptability to the phonetic alphabet specifically in relation to Plato's learning theory. In doing so, I am mainly seeking the question to what extent and how the formation of anamnesis theory can be influenced by the split between subject and object as a result of the expansion of alphabetic writing. In order to determine whether later interpretations may deviate from the original interpretation, it is necessary to reconstruct Plato's theory of learning from a problem-historical approach.

Once the reconstruction results in the original interpretation, the purpose of the doctoral dissertation, in the fourth step, may be to put the interpretation of Plato's concept of learning following Locke into focus. Since I assume that adaptability to communication technologies results in a change in the relationship between the inner world of mind and the outside world from time to time, which may trigger an avalanche of paradigm shifts in knowledge and learning theory, I consider this change to be the Archimedean point of the research.

Relying on this, the problem of the Gordian knot created by the possibility of the detachment of the cognitive mind and the outside world, that is, the derivation of knowledge out of the mind, will be introduced. Archimedes' solid point, which in its original meaning is the base that operates the hoist to turn the world from its corners, helps cut through this knot. The Archimedes' point of this doctoral thesis is the relation between the cognitive mind and the phenomena of the outside world, whose changes illuminate both the learning theories and the circumstances of their interpretation.

Research Questions

1. Can adaptivity to phonetic alphabet, book printing, motion picture and computerization as communication technologies influence the change in the concept of learning?

2. Can there be a qualitative difference between the learning concepts of different historical periods in terms of adaptivity to communication technologies?

3. Could Platon's learning theory be effected by the adaptivity to the phonetic alphabet?

4. Can Plato's interpretation of learning theory be influenced by adaptivity to book printing as a communication technology?

Research Methods

In the context of an educational history research, I chose a deductive research strategy based mainly on a review of the extensive literature on the broader context of Platonic dialogues. With a problem-historical approach, I focused on capturing the drivers of changes in the concept of learning as a basic notion and the temporal interpretation of the relation between subject and object in the light of adaptivity to communication technologies. In connection with this, I made a comparative analysis of the changes in the perception of learning from antiquity to the present. Based on this, I investigated how adaptivity to the phonetic alphabet might have influenced Plato's theory of learning. In the course of the interpretive analysis, I proved the great influence of adaptivity to communication technologies on the concept of learning by elucidating the causal relationships formed from the set of collected data.

Research Sources

Among the primary written sources, this research draws heavily on the legacy of a popular "pedagogical, philosophical thinker known from the history of universal education" (*Kéri* 2001, 34), who is known as the starting point of numerous 'problem-historical nodes' not only in pedagogy but also in distinguished philosophy. Since philosophy is a series of footnotes written for Plato (*Whitehead* 2001, 57), it was possible to shed light on post-Plato epistemological paradigms and learning theories interpreted as 'footnotes' and which 'main text' they intend to strike and in what way.

The significance of Platonic dialogues is, according to the researchers, such that ancient Greek thinkers, in the wake of Socrates' leading role, distinguish in time, and we can distinguish between a Prescratic and a post-Socratic period (*Farrington* 1949, 98). This separation indicates that Plato's theory of knowledge and learning is the first known landmark in the history of both epistemology and didactics. Considering Platonic philosophy witnesses a paradigm shift, it stands out from the rest of the ancient authors in terms of a change in the concept of learning.

As a result, I assume that adaptivity to the first significant change in communication technology demanded its associated paradigm and learning theory. The surviving Platonic dialogues attest to the fact that adaptability to the phonetic alphabet in the ancient Greek world played a major role in the creation of Plato's artificial paradigm and didactics. Not only did he create a new theory of knowledge and learning, but he was also the first to create a themed and approachable description derived from adaptivity (*Herget* 2000, 27).

Due to the fact that the dominant didactics, assuming a qualitative development, offers a better alternative than the previous ones, it tends to address the antecedents with an anachronistic view. In contrast, I make an attempt to present Plato's theory of learning in its original meaning, by analyzing adaptivity to the phonetic alphabet. According to this reconstruction, the original state necessarily differs from Locke's interpretations, which, viewed through the glasses of the latest paradigm, regard ancient learning as merely a transmission of knowledge already processed by others.

Results of the Research

The study has shown that adapting to phonetic alphabet, book printing, motion picture, and computerism can have a major impact on the changing perception of learning from period to period because it interprets the relationship between subject and object differently. As a consequence, the 'problem to be solved', such as, how the cognitive mind can gain its knowledge from the outside world, emerged repeatedly. Along with the challenge of media interiorization, the knowledge and learning theory of a paradigm can be shaped, whereby the cognitive mind resembles the tool of a given communication technology. The cognitive mind became similar to a wax board used for engraving by the appearance of the phonetic alphabet (*Theaetetus* 191c-e); to a book (*Philebos* 38e); by the spread of book printing, to a blank page of a printed book (*Locke* 2003, 107); by the spread of moving picture, to a machine taking snapshots (*Bergson* 1987, 278); and, by the appearance of computerization, to a computer managing information (*Neumann* 2006, 71).

Based on this, no qualitative difference can be assumed either in epistemological paradigms or in learning concepts, so it seems pointless to outline a process of development. Kuhn's novelty was that he falsified the cumulative linear development of scientific knowledge and procedures illustrated by handbooks describing each discipline (*Kuhn* 1984, 18). According to this, the activity of normal science is a "futile endeavor" to force nature into the scheme of paradigm expectations (*Kuhn* 1984, 22-23). He argues that, owing to the efforts to reconcile theory and reality, the existence of a paradigm raises the "problem to be solved" (*Kuhn* 1984, 49). Kuhn does not assume a qualitative difference between paradigms, because none can provide more than a possible model, which in itself cannot bring true reality.

While positivism derived from empiricism explains that "theories are only human interpretations of objective data" (*Kuhn* 1984, 171), Kuhn suspects that "... some kind of paradigm is also a prerequisite for perception itself" (*Kuhn* 1984, 155). To the question how the changes of perception might be connected to paradigm shifts, the answer is found in McLuhan's theory. Based on this, I argue that the development of knowledge and learning theories is greatly influenced by the adaptivity to phonetic alphabet, book printing, motion picture, and computerization.

Unlike Kuhn, in the light of adaptivity to communication technologies, I presume that it is not the paradigm that generates the main 'problem to be solved', but the paradigm itself: the changed relationship between the cognitive mind and the outside world. Namely, how the subject and the object can interact with each other as a result of adaptivity to communication technologies plays a major role in the development of knowledge and learning theory paradigms. While adaptivity to the phonetic alphabet creates the possibility of separating the subject and the object, adaptivity to book printing departs each other, adaptivity to motion picture brings them closer, and they are reunited through adaptivity to computerization. These changes arise the 'problem to be solved', such as the relationship that may exist between the cognitive mind and the outside world. One possible solution was offered by the knowledge and learning theory of ancient Platonism, modern empiricism, modern pragmatism, and post-modern constructivism.

As a consequence of adaptivity to the phonetic alphabet, writing attempts to create what could only exist within the mind (*Ong* 2010, 74), and the observer begins to examine the image from an external perspective, separated from the image (*McLuhan* 2001, 51-52). As a result, the

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possibility of separation between subject and object may have arisen at all, which subsequently led to the questioning of the relationship between the cognitive mind and the outside world.

Just as adaptability to the phonetic alphabet severely separated sight from the world of sound, thinking from perception, meaning from the sound of letters, subject from object (*McLuhan* 2001, 61-62), so Plato's epistemology distinguished the world of perception and the realm of ideas accessible by abstraction (*Republic* 514a-516a). Under the influence of the 'textual revolution' in Plato's philosophy, logical-conceptual thinking superseded mythological-imaginary thinking (*Havelock* 1963, 261). Plato's novelty was that he created ideas by conceptualizing the common features of things. His theory of ideas was the first to draw attention to the fact that we can express ourselves not only in the language of proper names, but also in general terms. Because Platonic epistemology projected concepts to reality accepted by experience (*Ivins* 1953, 63, *Pais* 1988, 328-329), the first artificial paradigm was born.

The "problem to be solved", how the cognitive mind and the outside world can connect with each other, offering a possible answer, Plato does not seek knowledge from perception, but from the subject through the generality of conceptual thinking captured by reason (*Parmenides* 132b, *Phaidros* 249b) *Theaetetus* 150d, *Symposium* 175d, *Jaeger* 1973, III, 754, 757). This led to the appearance of the first known theory of learning, the Platonic anamnesis, which identifies learning by 'remembering' ideas that can be evoked from the soul (*Phaidon* 75e, *Menon* 81d, 97e-98a, *Phaidros* 249b).

In the light of Platonic sources, anamnesis could not at all mean the transfer of knowledge, nor the literal recollection, but the inner operation of the cognitive mind. For knowledge is brought by the soul from its former existence. Because of its central role in Platonic pastoral practice, the transformation of man can be accomplished with the help of reason. For insight can turn the soul toward ideas independent of sensory experience. In this way, virtue is not a set of behavioral schemes, not knowledge based on logical insight, but an intellectual attitude from the inside toward the outside (*Dodds* 2002, 150). For Plato sees unique physical phenomena as shadows of ideas denoted by generic concepts, the purpose of Platonic education, beyond the appearance of individual things, is to draw them to the generalized reality that can be denoted by concepts. Given that the soul needs to be persuaded to grasp concepts and to have a clean lifestyle that assures its success, learning based on Platonic live speech can be considered a 'shaping of the spirit' (*Heidl* 2015, 9-12).

Adaptability to book printing is evidenced by the widespread use of silent reading as thinking becomes inward and the mind assuming the intellectual function of the soul becomes itself an object (*McLuhan* 2001, 269, *Nyíri* 1998, 14-15, *Demeter* 2003, 169). As a result, the distance between subject and object increased, so that another 'problem to be solved' might arise, such as, how one might be acquainted with what appears to be separate from its own consciousness. Locke, who shaped the paradigm of modern empiricism, offered a possible solution, according to which experience was printed on the "blank page" of the mind as characters, in other terms, ideas (*Locke* 2003, 82 and 107).

As a result of the "sensualist revolution" (*Báthory* 1985, 28), the concept of learning of the second didactic, in sharp contrast to Plato's first didacticism, knowledge is originated from the outside of the subject mediated by perception (*Locke* 2003, 38, *Comenius* 1992, 66). Locke testifies that the inherently direct relationship between the cognitive mind and the subject has been greatly altered by adaptivity to book printing (*Locke* 2003, 82). Consequently, the consciousness of the learner was thought to be filled with impressions from perception, similar to a blank page in a "printed" book, and these imprints were assumed to be linked by associations that obey Newtonian mechanical laws. In the construction of Locke, who introduces the name 'association' to philosophy, appears the musician who follows the chain of union (*Locke* 2003, 439-440). Based on this, ideas considered as imaginations follow one another in an orderly fashion, which is largely due to adaptivity to book printing (*Nyíri* 2011, 160).

Unlike Plato, in Locke's epistemology, knowledge comes from the outside of the subject, thereby cognition became an imprint of the outside world stamped into the mind. As a result, the concept of a knowledge that is transferable in- and outward the mind became popular. Like Plato, Locke expresses the object of knowledge with ideas, but unlike the original essence, those can be gained by the outer perception of the cognitive mind (*Locke* 2003, 38). As a result, the conceptions introduced by Plato, such as form or idea, imprint, and sealing, were able to interpreted in a different way.

While the engraving of the waxboard simile symbolizes the act of imaging of the occurred incision on the basis of reconstruction of the Platonic history, the same term in Comenius refers to anchoring by mechanical repetition (*Comenius* 1992, 156-158). On this basis, in parallel with the reproduction of letters in unaltered form, Comenius' 'forge' establishes the practice of mechanical engraving and unchanged repetition. Consequently, what appears to Plato as a

knowledge-producing act of anamnesis is already a literal recollection of Comenius (*Comenius* 1992, 142).

By Locke the adaptivity to book printing not only greatly influenced learning theories, but also concepts about education. For he not only sees the mind as a "clean sheet" that the environment can 'write full' (*Locke* 2003, 107), but also the learner who can be 'written full' by the educator. '… Great care must be taken to shape the child's mind…' (*Locke* 1914, 59). On this basis, he 'likens the soul of a born child to a blank sheet written full by the environment and the educator' (*Pukánszky* 2001, 94). While Platonic anamnesis is facilitated by a right-turn of the soul (*Republic* 518d-525c), the didactics of Locke idealizes the shaping from the outside.

The *'visual turn'* (*Nyíri* 2013, 52), which plays a major role during the next paradigm shift During the next paradigm shift, motion picture divides the live process of reality into a series of still snapshots. Similarly, the cognitive mind identified by the snapshot machine captures a series of states (*Bergson* 1987, 278). Just as Einstein moved Newtonian space and time, which was formerly interpreted as a passive vessel (*Einstein* 2005, 177-179), so did the third didactic with regard to the notions that the second didactic considered static. While Plato considers truth to be a static, final thing, pragmatism turns thinking into an evolutionary process. The mobilization of images was accompanied by the collapse of the Gutenberg Galaxy, based on belief in one viewpoint (*McLuhan* 2001, 282). Consequently, the 'problem to be solved' in this paradigm is no longer how to make acquaintance of the outside world, but how to recreate it (*Durant* 1996, 540). Accordingly, the focus of learning has shifted from cognition to adapting to a changed industrial environment (*Németh* 2004, 80).

In the next paradigm shift, the cognitive revolution that emerged as a consequence of adaptability to computerization brought with it the spread of symbol processing and reasoning by information management (*Pléh* 1998, 29-32 and 72-73) because information stored on a computer can not only be stored, it can be altered any time. Likewise, quantum physics, unlike before, did not only think in particles, but also recognized the wave nature of material, and thus the possibility of adopting multiple perspectives at the same time could arise (Bohr 1984, 85, McLuhan 2001, 306-307), and another 'problem to be solved' is how to resolve the dividing line between subject and object emerged. This challenge was attempted to be answered by the epistemology of cognitivism (*Nahalka* 2002, 26) and its fourth didactic, the constructivist learning concept that constructs knowledge within the mind (*Nahalka* 2002, 41-43).

As adaptability to communication technology greatly influences the development of epistemological paradigms and the formation of learning concepts through epistemology, both paradigms and learning concepts are considered equivalent. The change in the perception of learning across the ages suggests much more historical development than quality. The assumption of qualitative development is simplified in a way that paradigms have different interpretations of the relationship between the cognitive mind and the outside world. As a result, Locke's pursuit of ideas was no longer achieved through thinking but through perception, and the act of creating ancient knowledge was reduced to modern literal remembrance. This opened the way to learning concepts that were considered "acquisition", which conceived of knowledge as being obtainable outside the cognitive mind and as knowledge depicted as transferable. On this basis, it has been proved that Plato's modern interpretation of learning theory is greatly influenced by the adaptivity to book printing.

Opportunities for Further Research

Since I have organized the mapping of the change of the learning theory from the ancient to the present day according to a modern interpretation of an ancient theory, according to the needs of this research so far, I could only mention the consequences of adaptivity to communication technologies. For this reason, detailed study of the outlined map of the history of learning requires further research, which can be achieved by analyzing the learning theory of a great deal of authors within a period.

The didactic typology presented in the doctoral dissertation is a work that fills a gap in Hungarian educational history literature, therefore, further research is needed on the context-specific writing of the comprehensive history of educational interaction, which can be heavily relied upon in teacher training. Thus, it is necessary to expand the research both horizontally within each era and vertically from the antiquity to the present day. Correspondingly, non-Plato authors in ancient times, and theories of learning from the Middle Ages, the modern and the postmodern, may be examined. The wider the range is, the greater the conclusions are to be drawn from generalizations based on extensive source analysis.

Writing a learning history also provides an opportunity to balance learning history and educational history, as well as to reduce the tension between knowledge transfer and capability development, additionally, as for teaching history, to develop the curriculum in order to evoke enthusiasm and imagination. In particular, it is advisable to establish links between intellectual

flows based on the adaptivity to communication technologies, economic processes and political history.

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