

TRANSFORMATIONS OF TEACHERS' CONSCIOUSNESS IN THE DIGITAL AGE: AN EXISTENTIALIST PERSPECTIVE

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Abstract

The digital revolution's effect on human life is well evident in our times. Many aspects such as health, social interactions, transportation have changed following the digital revolution. The question that the answer for is yet to be revealed is whether and how it has impacted human consciousness. Contemporary philosophers argue that the digital revolution is the fourth in a series of three previous revolutions, which led to a consciousness shift and changed the way we perceive ourselves, our relations with the world, and others. Previous research show that high school science teachers have demonstrated changes in the worldview related to the digital revolution. Yet it seems that evidence for a profound and inclusive shift in consciousness is still missing. The present paper deals with this problem. A promising direction that could yield answers to these questions would be one of the main transformations of the digital society - shifting from the primacy of entities over interactions to the primacy of interactions over entities. We believe that this transformation, which was not deeply studied so far, has epistemological implications that may significantly impact foundational aspects of the educational domain, up to the level of undermining the essence of the teaching profession, as was customary thus far. For teachers, this condition is existential and can lead to existential anxiety concerning their profession. The research hypothesizes that the epistemological shift will lead to professional existential anxiety of science teachers. In turn, it will be evidence of the transformation of teachers' consciousness in the digital age. Preliminary results of the study confirmed this approach. We believe that the study will open a way to develop methods for overcoming existential anxiety and to support teachers in successfully coping with the ever-changing reality.

Keywords: Digital age, digital epistemology, teachers' existential professional change, professional identity.

1 INTRODUCTION

On the verge of the third decade of the second millennium, the fact of a digital revolution has become unquestionable. There is no doubt that this revolution, derived from tremendous technological advancements occurring in the last few decades, has a massive impact on human lives, affecting day-to-day habits and lifestyles. The intriguing question remains: whether and in what way this revolution affects the human mind. A number of philosophers argue that the digital revolution has taken on a meaning beyond its technological one; it has come to comprise a revolution in human consciousness [1].

In 1917, Sigmund Freud defined three scientific revolutions that yielded a substantial impact on human history [2]. The first, the Copernican revolution, parted with the concept of mankind being at the center of the Universe. The second, Darwinian revolution, led to an understanding of the fact that a human is not a unique creation but rather comprises part of nature, as the product of other animals' evolution. The third revolution, the Freudian one, repealed the conviction that human consciousness is fully predictable. These three revolutions have one unifying feature: they are neither technological nor social or political revolutions, as revolutions are usually predicted to be. Rather, all three revolutions involve the human consciousness and reflect fundamental changes in people's worldviews.

Presently, some theorists consider the transition of human society into the digital era - a revolution in human consciousness - to comprise the fourth revolution in this series. Such thinkers argue that the recent revolution, similarly to the three previous ones, relates to the very fundamental principles of the human being. Luciano Floridi, one of the widely known philosophers of digital society, wrote: "what we are currently experiencing is ... the fourth revolution, in the process of dislocation and reassessment of our fundamental nature and role in the universe. We are modifying our everyday perspective on the ultimate nature of reality, that is, our metaphysics, from a materialist one, in which physical objects and processes play a key role, to an informational one" [3]. According to Floridi, people start perceiving themselves as "the kind of informational organisms that live, flourish, interact, not as stand-alone entities but as networked agents in

a world that is made of information” [4]. Such an interpretation of the digital revolution characterizes it as a ‘worldview revolution’ followed by fundamental transformations in human consciousness. Then, namely, such changes in human consciousness are the focus of the present paper.

2 DIGITAL TRANSFORMATIONS

Floridi argues that information and communication technologies (ICTs) have a radical impact on the human condition. They are not traditional technological tools but environmental forces that significantly affect the human perception of: a) self-conception, b) mutual interactions, c) conception of reality, and d) interactions with reality. In the widely known “Onlife Manifesto” [5], four fundamental transformations of digital reality are provided. These transformations are as follows:

- **Blurring the distinction between reality and virtuality:**

The distinction between reality and virtuality has been part of human history and culture ever since. It corresponds with the dualist mind-body approach which has become a fundamental principle of the way we think and act. Intensive online presence, while conducting daily activities such as, social communication, learning, shopping etc., in the virtual space, makes it difficult to distinguish between real and virtual, fantasy and reality.

- **Blurring the distinction between people, nature and artefacts:**

This phenomenon became meaningful following Darwin’s theory of evolution in which we became part of nature like any other animal and the industrial era, in which manufacturing used natural resources as raw materials. The digital era and modern technology introduced artificial organs, smart sensors, and artificial intelligence, all of which make it difficult to distinguish between machine, human and natural. We actually are getting acquainted with new hybrid human – artificial, artificial– natural entities so that the once clear distinctions between people, nature, and artefacts are no longer valid.

- **A reversal from information scarcity to information abundance**

Digital technologies and new media have shifted us to an era in which mere existence produces information, by the many actions we take online – shopping, reading, searching, communicating – all of these create a digital footprint which in turn can be tracked and form a “digital shadow”. The information has become a resource that is growing exponentially, and we are limited not by its availability, as was the case a couple of decades ago, but by our ability to filter and select the relevant information out of the overwhelming abundance available to us. This radical change has implications on the way we come to know the world, our perceptions of information and knowledge, manifested in our ever-growing inclination to know a physical object or phenomenon via its informational representation, rather than through our senses.

- **Shifting from the primacy of entities over interactions to the primacy of interactions over entities**

In the digitally hyper-connected era, technology enables almost limitless interaction with numerous amounts of others at any space and time. It derives a state where the interactions between entities become so dominant, that they shape the entities’ nature and identity. This is contrary to the perception that the identity and essence of entities define the interaction between them. Accordingly, a standalone entity is meaningless without its interactions and therefore, cannot grow and develop without them.

3 CHANGES IN HUMANS’ WORLDVIEWS

The extent and how human consciousness and worldviews are affected by the digital revolution has many practical implications, some of the most important ones in the educational arena. Teachers play a significant role in this regard for several reasons. First of all, they are the ones who can convey the transformations embodied in the digital revolution and their meanings to the younger generations, a state which one could say is conditioned by if and in what way teachers perceive these changes themselves. Another aspect is teachers’ ability to understand and communicate with their students, who we call - “digital natives,” born more or less as the first smartphone broke into our lives. In other words, teachers’ ability to understand their students’ digital habits, presence, and educational needs in the digital era is a derivative of their worldviews and consciousness regarding it [6]. Besides, teachers’

pedagogical choices were found to be strongly correlated with their perceptions, epistemological and ontological views [7], [8].

While studying the occurrence and nature of science teachers' transformations in consciousness, Tsybulsky and Levin [9] found that teachers could be divided into three different categories, based on the way they perceived themselves and their role in the digital era:

- **The outside observer or 'foreigner':**

Teachers being aware of the changes that occurred around them, but only observed them from the outside and felt alienated from the digital society.

- **The involved observer or 'the digital immigrant':**

Teachers being aware and actively involved in the digital developments that were taking place in their lives. Yet, they participated in this reality in the way that immigrants typically do; that is, they were forced to learn a new culture and make a concerted effort to understand it from the perspective of the 'natives.'

- **The participant or 'the digital citizen':**

These teachers considering themselves an integral part of the digital society. Not only were they aware of the existence of the digital society, but they also felt that they were a vital part of it.

The above findings have significant value in shedding light on the way teachers are experiencing the digital revolution, how and to what extent they are incorporating digital technologies and media into their professional and personal lives, and their worldviews with regard to the digital era. An individual's *worldview* combines beliefs, assumptions, attitudes, values and ideas to form a comprehensive model of reality [10]. S. Freud [11], considered worldview to be a "handbook to life", concepts that individuals hold consciously, by which they classify, discriminate, generalize, and interpret what they experience. At the same time, the human worldview is not fully reflecting the human consciousness, covering only a rational, aware part of it. A significant shift in the consciousness should include not only the rational aspects but also the emotional, spiritual, and evasive components of consciousness, in a way that would have a holistic effect on every aspect of an individual's being. Thus, the above findings are incapable to reflect changes in people's consciousness, which, in turn, constitute the main symptoms of the digital revolution.

The above understanding was the starting point of the present study, which aims to harness the digital changes taking place in human consciousness and not just in worldviews. How does it emerge, and what would imply or, on the other hand, hinder its occurrence?

4 THE FOURTH DIGITAL TRANSFORMATION AND CHANGES IN HUMANS' WORLDVIEWS

We found that a promising direction that could yield answers to these questions would be the fourth of digital transformations - shifting from the primacy of entities over interactions to the primacy of interactions over entities. This transformation, which has not been extensively studied so far [12], has epistemological implications that may significantly impact the foundational aspects of the educational domain, up to the level of rethinking the very essence of the teaching profession.

This transformation, inherent to the hyper-connected digital world, points out the dominance of an entity's interactions: its array of associations and relations, its connections with other entities, as a critical component, which affects its qualities and positioning relative to others. In other words, the way entities are associated with one another constitutes an organizing principle, replacing another most dominant, apparent, and seemingly unshakable one - cause and effect, which stands in the basis of scientific thinking with regards to the world's order. It leads to a new way of understanding the world, a new epistemology. Following the above, and considering the third digital transformation, which is the knowledge abundance, leads to an adaptation of a knowledge structure that characterizes the digital culture, hence to a relationally constructed knowledge, rather than a causal one. A web search of a specific topic, for example, is associative in nature, a discovery journey between terms, pieces of data, and content. One's navigation is based on the connections and links between them. Jonas Ingvarsson [13] argues that "The digital affords a new paradigm of knowledge: a digital epistemology," which entails a shift from "causality to relationships." He proposed an approach to digital epistemology by using a metaphor of a five-hundred-year-old media technology — "cabinets of curiosities" also known as *kunstammer*, which were common since the 16th century. These were collections of notable objects

organized in one space according to a relational order. "The cabinet's knowledge production is performative and associative and operates with a contingent and recursive composition of objects rather than with a symbolic and linear logic" [13]. The Age of Enlightenment put an end to the success of the "cabinets of curiosities". The new Enlightenment epistemology proclaimed the dominance of reason, logic, and, to a large extent, the cause-and-effect structure of human knowledge, which served as the reason that the museum came at the dare of the "cabinets of curiosities". The Enlightenment introduced the causal, linear, comprehensive order of surrounding reality. In this regard, the concept of the museum replaced the concept of "cabinets of curiosities". In the museum, exhibitions led the visitor through a pre-defined only path, which corresponds to the famous encyclopedic ideal of knowledge, born of the Enlightenment.

The causal knowledge paradigm is a significant component of scientific thinking and the basic principle in today's pedagogical and academic practices. Replacing the conventional causal epistemology with the middle age "cabinets of curiosities" epistemology, is evidently a very dramatic one. The fact that digital epistemology moves from causality to relations is a paradigmatic transformation. As such, it can be argued that "digital knowledge should announce an epistemic shift for the academic practice" [14]. Following this notion, we believe that this paradigmatic change undermines the very essence of the current way of teaching, which is strongly rooted in the causal, linear way of thought. Identifying the symptoms of this phenomenon may be overwhelming for some teachers and lead to feelings of losing the foundational grounds of their profession, the essence of their expertise, their 'art' of mediating the world order to their students while relying on cause-and-effect reasoning. This state is of an existential nature at a professional level, at least. Amanda Lagerkvist [15] observes the human condition in the digital era from an existential perspective. Following the Heideggerian existential terminology, she uses the term *thrownness* to describe the human state in the digital era. The tremendous technological advancements constitute a new reality into which we are *thrown*. In turn, we have to reassign new meanings to our understanding of ourselves, our environment, our social interactions, and eventually to the world's metaphysics. In teachers' case, the epistemological change characterizing the digital era, may *throw* teachers into a new professional reality where they have to rethink the most essential values of their profession.

This vulnerable condition involves existential anxiety in the professional domain, that might be expressed in various reactions – feelings of existential vacuum and meaninglessness, avoidance, placing responsibility on others, looking for a new role, or possibly looking for a new meaning within the teacher's role [16]. Experiencing, reacting, and coping with these existential changes, seems to be an inevitable part of a shift in consciousness related to the digital era.

We hypothesize that the epistemological shift will lead to professional existential anxiety of science teachers. In turn, it will be an evidence of the transformation of teachers' consciousness in the digital age. The study deals with the mechanism and implications of this type of existential professional anxiety and a corresponding consciousness transformation.

5 PRELIMINARY RESULTS AND CONCLUSIONS

The above ideas were examined in a qualitative study based on in-depth interviews with high school science teachers.

The preliminary results are as follows:

- 1 Our hypothesis about the intensity of the teachers' reactions to the new epistemological paradigm was confirmed.
- 2 Most respondents were very eager to understand the roots and the nature of moving away from the traditional causal epistemology.
- 3 Some respondents expressed frustration and negative reactions to the described novelties.
- 4 Some expressions of professional existential anxiety have been observed.

Summarizing, the preliminary results of the study confirmed the approach of using the fourth transformation's epistemological implications on the educational field, with an existential perspective, to explore teachers' perceptions and consciousness changes. Teachers expressed strong reactions around these ideas, including overwhelm, denial, frustration, and looking for others who will take responsibility.

We believe that the study will open a way to develop methods for overcoming existential anxiety and supporting teachers in successfully coping with the ever-changing reality as part of their constant pursuit of meaningful and fulfilling professional practice.

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