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Digital transformation as a reconstruction of knowledge

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There is already very extensive literature on digital transformation. Its special abundance falls in 2018, 2019, 2020 when dozens of books on it are published. Digital transformation appears there in three basic variants: (1) as a description of a certain business and organizational reality of enterprises; (2) as a source of technological modernization of enterprises; (3) as a broader social, cultural, or even psychological process.

The most common context for the description of digital transformation is business processes that directly address organization management problems, which is the most common source for further analysis. As a rule, they are based on a deterministic approach, i.e. they assume that the ultimate source of digital transformation is digital technologies that directly or as variables shaping the social environment affect organizational or social processes.

This is an approach that significantly simplifies the problem because digital transformation is actually the process of changing the understanding and creation of knowledge as a way of representing the world that leads to its description and use. This change consists in resigning from the assumption of direct correspondence of cognitive structures and the world, which is the basis of not only the traditional disciplined cognitive approach (e.g. science), but also everyday practice.

The aforementioned change can be described as the undermining of the direct possibility of representing the world in favor of free cognitive structures, conceived as constructs independent of the world, the correctness of which does not result from compliance with the external world, but internal coherence. It is a cognitive revolution that takes place primarily in the field of mathematics, which, however, is understood as the descriptive base of sciences, so it concerns science as such.

The field in which this change takes place is initially the area of mathematics, in particular geometry, which has been taking place since the mid-nineteenth century, which results from the generally increasing level of abstraction and emerging metaphysical questions about the nature of mathematical entities such as the number. It then moves to the field of mathematical theory and basic questions about the nature of mathematical structures and their cognitive abilities, and then covers science as such in the late 19th and early 20th centuries. The last field in which this change takes place is the philosophy and social sciences. This process has been going on since at least the 1930s.

At the beginning of the 20th century (the 1920s and 1930s) the emergence of a new cognitive paradigm – a new episteme, to use the Foucault nomenclature – is accompanied by new descriptive structures such as system and network, and later also the idea of complexity, which stems from the system idea. They are "universal" in the implementation (domain) sense because they arise as products of an abstract, speculative, meta-level, and holistic approach and they are inherently "mathematical" given their quantitative and formal nature. A model of knowledge can also be based on them, an example of which is the concept of discursive space.

The practical implementation of this revolution is the emergence of the technical device i.e. the computing machine, which implements in a simplified way the mathematical principles of analyzing the world. This machine and the technologies based on it (digital, IT) should rather be treated as the effects of described processes, which is crucial for further analyzes.