

“Computing” and “Information”: Two Paths in “Information Turn”[†]

Wei He

Department of Philosophy, School of Humanities and Social Sciences, Xi'an Jiaotong University, No. 28, Xianning West Road, Xi'an 710049, China; weihe_xjtu@163.com

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Abstract: The “information turn” has gradually become a new direction in philosophy to replace the “linguistic turn”, with “computing” and “information” as the main paths. The main theories of “computing” path are info-computationalism and Floridi’s philosophy of information; the main theory of “information” path is Wu Kun’s philosophy of information. This paper attempts to explain the modes of operation of the two paths and discriminate and analyze the essential differences between the two paths, which lie in the realization of information based on these three theories.

Keywords: information turn; “computing” path; “information” path

1. Introduction

There is a general consensus in academic circles that the mainstream philosophy of the West has undergone two obvious turns. Against the background of the industrial revolution, the focus of philosophical research has shifted from the ontology of the nature of object to the epistemology of the relationship between subject–object knowledge. In the middle of the twentieth century, the birth of modern logic, which is characterized by formal language, had established a close relationship between “logic” and “language”. The most prominent characteristic of the linguistic turn is analyzing language with the method of modern logic, and the result is the formation of linguistic philosophy [1]. With the development of intellectualization and internet decentralization, the amount and level of information processed by human beings have reached the degree that the previous society could not reach, and human beings are stepping into the information society. With “information” becoming a symbol of society, the philosophical circle has been advancing with the times on the discussion of information and has begun to question whether the philosophy of linguistics based on a modern logic system can still be used as the vane of philosophy. So, the academic circles put forward an information turn in philosophy, hoping that “information” can provide new solutions for philosophy.

What theory can guide the “information turn” of philosophy? It has become a hot topic in philosophical circles. There are three theories that are gradually having influence on the answer to this question: info-computationalism in the paradigm of philosophy of artificial intelligence, Floridi’s philosophy of information, and Wu Kun’s philosophy of information. According to the characteristics of the three theories, this paper proposes that the research methods of information can be divided into two paths: “computing” and “information”. Then, the paper discusses how to proceed with the two paths and analyzes the essential differences between them by comparison. The research methods of info-computationalism and Floridi’s philosophy of information are regarded as the “computing” path, and the research method of Wu Kun’s philosophy of information is regarded as the “information” path.



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2. How “Computing” and “Information” Paths Proceed Respectively

We will discuss the “computing” path according to the above distinction: one is the “computing” path under info-computationalism, the other is the “computing” path under Floridi’s philosophy of information.

Computationalism is a mainstream program in artificial intelligence research [2]. When info-computationalism explores the problem of “information”, it seldom devotes itself to the study of “information” itself, but studies the process of processing “information” through “computing”. The nature of this process is transdisciplinary [3], and the methodological support is reductionism [4]. In terms of methodology, on account of information being computable, the nature of info-computationalism has the color of reductionism, which embodies the belief that the emergence process from one part to the whole is computable [4]. The complex cognitive process of human beings is returned to the “computing” processing of specific “information” symbols by the human brain.

Floridi’s “computing [5]” path can be divided into two aspects. First, “computation” as a means is derived from, but not limited to, the meaning of the Turing machine and is a way of processing “information”. Second, obtaining useful methodologies from computational science supports the fundamental research of philosophy of information. On account of the developmental trend of computing science, it will constantly provide philosophy of information with fresh methodological guidance.

The philosophy of information established by Wu Kun forms the philosophy of information system through constructing “information” itself [6]. The fundamental aspect of Wu Kun’s philosophy of information is to clearly define information as the “indirect existence” of substance through the construction of information ontology. It also defines the nature of the intermediary of “information”, which is introduced into the discussion of the subject–object relationship in epistemology and becomes the third factor of epistemology, so that it can be used in the discussion of other related information issues. This way of studying “information” is to construct the definition and nature of “information” itself and to determine the research content and direction of “information” on the basis of information ontology and epistemology and, finally, to form the research paradigm of bottom-up pyramid.

3. Similarities and Differences between “Computing” Path and “Information” Path

3.1. From the Perspectives of Philosophy of Non-Information and Philosophy of Information

“Info-computationalism” is a program of the philosophy of artificial intelligence. The essential question of the philosophy of artificial intelligence is “are humans machines”? In order to answer this question, the question has been changed to “can humans process information as well as machines”? Under the framework of “info-computationalism”, the question continues to be “how does computing handle complex information”? Therefore, the emphasis of “info-computationalism” on “information” relies on how to use “computing” to process “information”. In this way, it is inevitable to conduct transdisciplinary research in natural sciences, such as mathematics and physics, as well as computer science, thus influencing and promoting the development of various modern scientific disciplines. This approach to “information” is the philosophy of artificial intelligence, not the philosophy of information.

Both Floridi [5] and Wukun [7] have developed their own philosophies of information based on the question of what information is as the essential problem of the discipline system. Although Floridi also proposed that computing is the way of information processing, the purpose of “computing” is to answer the question “what is the way of information processing”, rather than to study how the way of information processing is carried out. So, Floridi put forward that his philosophy of information is transdisciplinary, rather than interdisciplinary, namely, the philosophy of information is to absorb the methodology of computer science and other sciences to form a new kind of science, rather than just operating across the other sciences to directly promote the scientific research in the trans-

disciplinary way. It is the most essential difference between info-computationalism and Floridi's philosophy of information.

3.2. *From the Perspective of the Realization of Information*

When we discuss that there are two paths of studying information, computing and information, the question is what are the two ways of studying information through computing and information. So, here comes a deep logical question: how can the study of "information" be realized through the two paths of "computing" and "information"? Therefore, by comparing the two paths of "computing" and "information", we need to discuss the realization of "information" by the two paths, that is, how to study "information" and what problems have been studied about "information" through these two paths.

"Info-computationalism" regards "computing" as the processing method of "information" [8]. So, this "computing" path to information is performed by studying computation itself, by researching what computation is, how one implements an algorithm, what is calculable, and a series of related questions to study how information is processed by computing, so that the essence and purpose of "information" are explained in the sense of computation.

Floridi's philosophy of information [5] takes "computing" as the way of information processing in the stipulation of "information" and computational science as the methodological source in the construction of the philosophy of information. Therefore, Floridi also regarded the philosophy of artificial intelligence as an immature paradigm of the philosophy of information and turned the discussion of how "computing" deals with "information" in the philosophy of artificial intelligence to the aspect of "information". Floridi's establishment of the philosophy of information shifts the question domain to what information is. However, his aim was not to give a definitive answer to the question, but to study what information is in order to draw a scope, and this scope is drawn from the methodology of computational science. Thus, the question arises of how the methodology that philosophy of information derives from computational science can be applied to other fields of study, such as cognitive philosophy, analytical philosophy, ethics, and aesthetics.

Before discussing the question of what information is, Wu Kun's philosophy of information [9] first established information ontology, namely, "information" (indirect existence) and "substance" (direct existence) together as the source of the world under the materialist world outlook. Then, discuss what the essence of "information" is and give a clear definition of information. Additionally, construct information epistemology to break the traditional paradigm of subject-object dichotomy. After constructing a complete philosophy of information system, it will use the basis of this system to solve other problems' related information.

It can be seen that the essential difference between the "computing" path and the "information" path lies in the different realization of "information". In the theory of "info-computationalism", "computing" is the only way to realize "information", so that the degree of realization of "information" is completely subjected to the degree of realization of "computing". Under this mode, all research to realize "information" must also be research to realize "computing". Additionally, Floridi thought systematically about research information problems and established the importance of philosophy of information; this kind of philosophy of information will gain available methodology from the computational science as the fundamental power to promote information, and accordingly, it is essential to stress that PI critically evaluates, shapes, and sharpens the conceptual, methodological, and theoretical basis of ICS [9]. Under this philosophical paradigm, the essential problem of "information" lies in the demarcation of a category rather than the solution of a problem, and the process of demarcation of this category is the process of realizing "information", which is determined by the application and criticism of computing methodology. On the other hand, Wu Kun established a complete philosophy of information system based on the reform of information ontology and information epistemology. Under this paradigm of philosophy of information, a world view based on "information" is constructed, and

the realization of “information” is realized through the study of “information” itself and related problems. So, “information” is the path to the realization of “information”.

4. Conclusions

This paper uses the “information turn” of philosophy as background knowledge in the construction of the text, so it does not discuss how the “information turn” of philosophy is possible. Some scholars, such as Floridi and Wu Kun, had put forward the turn of philosophy of information. The “information turn” of philosophy must be accompanied by the establishment of the “philosophy of information” system. The emergence of “philosophy of information” is the necessary condition for the “information turn” of philosophy. However, the existing system of “philosophy of information” is not single, and there are academic debates on different systems of “philosophy of information”. The academic circles have not formed a unified theory of philosophy of information. Therefore, this paper chooses to discuss the two paths of “computing” and “information” under the “information turn” of philosophy. Floridi’s philosophy of information and Wu Kun’s philosophy of information both adopt the philosophy system with “information” as the main body, which is different from the discussion of “info-computationalism” under the paradigm of artificial intelligence philosophy. However, “info-computationalism” relies on “computing” in the realization of “information”, while Floridi’s philosophy of information owes the realization of “information” to the realization of “computing methodology”. Both of them need “computing” as the intermediary in the realization of “information”, while Wu Kun’s philosophy of information realizes “information” directly through “information”. It is the essential difference between the two paths. This paper puts forward two ways of “computing” and “information” and analyzes the internal similarities and differences of the “information” research methods of the three mainstream theories in the information turn, which is helpful to clarify the disciplinary ways and promote the comparative studies of Chinese and foreign philosophy of information.

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