The Innovation and Contemporary Value of Interventionism

Mengru Li [1, 2], Ping Jiang[3]

1. University of Chinese Academy of Sciences, Beijing, China;

2. Institute for the History of Natural Sciences, Chinese Academy of Sciences, Beijing, China;

3. Shenyang Normal University, Shenyang, China;

Abstract: The description of causality from the perspective of manipulation is very consistent with human intuition, but the manipulationism and agentivity theory under the program of reductionism are always faced with the problem of definition cycle and anthropocentrism. Interventionism skillfully gets rid of this dilemma by changing the theoretical perspective and drawing on symbolic language. By turning to epistemology, interventionism makes the theoretical system not have to respond to ontology problems, and with the help of the symbolic language of structural equation, it breaks the binding between manipulation and subjectivity. This breakthrough from the theoretical perspective and the theoretical tool dimension has an important reference significance for the construction of the philosophy system with Chinese characteristics.

Keywords: Causality; Interventionism; Manipulationism

1. Introduction

Causality is the most basic relationship in the universe. Hume once likened causality to "the cement of the universe." The reason why we can divide responsibilities and predict the results of daily behaviors and experimental interventions is because we have presupposed the existence of causality. [1]Causality is also an age-old topic in the history of Chinese and western philosophy. After the third scientific and technological revolution, some scientists and philosophers believe that the most critical step to achieve AI is to let machines understand causality and carry out causal reasoning, which makes the topic of causality return to the perspective of philosophy again.

At present, the domestic attention to interventionism mainly focuses on three aspects. The first is the analysis, interpretation and evaluation of interventionism. The second aspect is to use the framework of interventionism to solve other causal problems. The third aspect is to analyze and discuss the debates among Woodward, Hausman and Cartwright. In the analysis of interventionism itself, most domestic scholars compare interventionism with other causal theories horizontally, and then highlight the characteristics of interventionism. They pay less attention to the breakthrough and solution of the previous theoretical dilemma in the process of the development of interventionism.

2. Manipulationism and its theoretical dilemma

The predecessor of interventionism is manipulationism. The core concept of manipulationism "manipulation" is intrinsically related to people's causal intuition. Because in daily life and scientific research, we all have such a simple cognition: if X is the cause of Y, that is, there is a causal relationship between X and Y, then we change the value of X, then the value of Y will also change. This is the principle behind the random control trial which is often used in the field of psychology and biomedicine. Such intuition has attracted many scholars to theorize the relationship between manipulation and causality.

The idea of manipulationism appeared first in R.Collingwood's An Essay on Metaphysics and Gaskin's (D.Gasking) Causation

and Recipes. But the first influential manipulationism was proposed by the philosopher von Wright (G. von Wright). In 1971, in Explanation and Understanding, Wright proposed: "the causal relationship between events should be considered in various (possible) actions.". The "action" here refers to manipulation. That is to say, if C is the cause of E, then the behavior of "manipulation" can make C happen, and then promote the occurrence of E.

Wright's manipulative causality theory faced two problems, which also led to its decline in the field of philosophy. First, the definition of causality by manipulationism would fall into a meaningless definition cycle. For example, the words "make" and "urge" in the above definition itself contain causality. Wright tried to resort to "the action of the agent" to avoid the cycle. The so-called agent is to reduce the words that will encounter circular accusations to the "action" of the agent. But "action" itself also contains causality. As long as the behavior is in the chain of causality definition, then the behavior must correspond to the consequences, and this "correspondence" is a way of expression of causality. Wright's view of reducing manipulation to agent action not only failed to solve the problem of definition cycle, but also made him face a second criticism: the definition of "anthropocentric". Because Wright reduced causality to agent, that is, human action. The defects of the perspective of human center are mainly reflected in two aspects. First of all, the anthropocentric perspective will still encounter the "cycle definition problem". If we want to prove that there is a causal relationship between X and Y. The method of manipulationism is to first assume an external behavior A, and ensure that A is the cause of X, then see whether the occurrence of X caused by A will cause the occurrence of Y. That is to say, before verifying whether there is a causal relationship between XY, a causal relationship AX has been defined. Using the existing causality to define the new causality, in this way, the use of manipulation is trapped in the cycle of definition. Secondly, the perspective of human center cannot be applied to all manipulation scenarios. For example, how to explain that "there is a causal relationship between the lunar gravity and the earth's tidal motion.". We can't verify the relationship between the moon's gravity and the tide by controlling whether the moon's gravity exists. Wright's response to this is: for the causal relationship that cannot be manipulated by human beings, it can be explained under the situation that we can manipulate events. Specifically, they proposed to use the concept of "similarity" to connect the familiar and human controllable causal events with human unable to manipulate causal events. However, different people have different understanding of similarity. The concept of "similarity" itself needs further explanation and a set of objective criteria for judging similarity.

3. The limitations of the Agency Theories

After the 1990s, under the influence of the third scientific and technological revolution, the causal theory of manipulation was gradually revived in the philosophical circle, and appeared as a new face of Agency Theories. Peter Menzies and Huw Price inherited manipulationism, taking agency and free action as a bridge between intervention and causality, which is quite a new bottle of old wine.

Menzies and Price believed that human is an indispensable part of the definition of causality. The agent theory defines causality as: event A and event B are different events.[3] If event A is an effective way for A free agent to make event B happen, then event a is the cause of event B. Menzies and Price believed that with the concept of free action, a non cyclical definition of causality can be provided, and causality can be attributed to a second quality. Obviously, it is still a causal theory under the program of reductionism, because it is still trying to find a first nature and make the first nature prior to the second nature. That is to say, they believe that free action is prior to cause and effect and constitutes cause and effect. Menzies and Price believe that their views can avoid the definition cycle, because the understanding of dynamic experience is independent of the general sense of causality. But actions, especially those that can lead to certain consequences, are themselves causal. Finally, they also have to admit that once the causal relationship is defined by human actions, the expression "the intervention of one thing in personal experience eventually causes another thing to happen" cannot be avoided in the definition.

Secondly, the emphasis on human as the agent in the definition makes them face the problem of anthropocentrism just like manipulationism. If the definition of causality is related to human ability, then can this definition explain the causal events that cannot be manipulated by human beings? If a causal event can't be explained from the perspective of human action, can't it determine the existence of causal relationship? Menzies and Price tried to explain how to use the agent theory to explain the non human

controllable causal events. They tried to explain with theory that "the San Francisco earthquake in 1989 was caused by friction between the continental plates": when an agent can cause an event, as a means of causing it, it is true, because some of the basic inherent characteristics of the situation involved are non causal in nature. Obviously, this statement is not convincing. Woodward also questioned the concept of "free action" in the theory of activism: can free action be understood as unrestricted action? If it is, then "free action" does not mean another result, let alone a specific result. Such actions and actions that can lead to specific results are contradictory, because actions that can lead to specific results are a constraint on free action. Assuming that action A is the cause of event B, if A can be understood as free action, then free action A cannot necessarily cause B to occur.

The reason why manipulationism and later agent theory can't solve the problem of cycle definition and anthropocentrism is that these two theories have no breakthrough in essence. First of all, in the two theories, "human action" and "human initiative" occupy an important position, so that the explanation of any causal relationship should start from human. However, in reality, especially in the field of basic science, there are many theories that human beings can't verify by playing human's subjective initiative. Secondly, they are all restricted by the reductionism of traditional philosophy. Reductionism always tries to decompose something or relationship into a more basic existence. However, whether causality can take the path of reductionism, the dilemma of manipulationism and agent theory seems to have given us the answer.

4. The innovation and breakthrough of Interventionism

In the 90s of the last century, with the development of computer theory and technology, the social productivity began to change in a subversive way. The interventionism of using symbolic language to depict causality in the framework of structural equation has received more attention and discussion. The same as manipulationism, the core concept of intervention, intervention with manipulation, is also to establish the relationship between intervention and causality. What's different is that they use the language of Causal Modeling to define the concept of intervention more precisely under the framework of structural equation.[8]

At present, domestic scholars pay more attention to the application of interventionism in other fields. Based on the interpretation of interventionism, Zhu Xu elaborated on how interventionism portrays "intervention variables" and invariant and modularity. In addition, he thinks that interventionism is very suitable for portraying the law of cause and effect in Social Sciences, because Hemple's regulations on scientific explanation are too strict, leading to no law in the field of Social Sciences according to his standards.[5] Zhu Xu believes that interventionism gives a causal definition in a range, which is more tolerant of social science theories.[6] On the basis of analyzing interventionism, Zhen Li pointed out that the problem of interventionism is the lack of ontological commitment, which she thought restricted the development of interventionism. She divides the existing causal theory into the production approach and the dependence approach.[2] She believes that the approach based interventionism starts from pragmatism and perspective. Although it is very consistent with causal intuition, and it is very prominent in the application of identifying causal relationship and causal reasoning, it is easy to fall into the same problem as Hume's rule theory if the discussion of ontology is ignored. On the basis of introducing interventionism, Xin Dong focuses on the quantitative characteristics of interventionism, and compares it with David Lewis's Counterfactual Theory, and points out that the quantitative characteristics of interventionism make it have a certain advantage over counterfactual in causality judgment.[7] The reason why she contrasts the two is that although both contain counterfactual, the reactions of the two theories are different after the "counterfactual". Counterfactual theory relies on the "possible world", specifically, the distance of the possible world to judge the causal relationship. The distance of the possible world is measured by the "similarity standard", which is more complicated and ambiguous. Facing the same scene, different people judge the degree of similarity differently. However, interventionism makes the division of degree from the perspective of quantification, and the standard of degree division is quantitative and rigorous, so it is not easy to produce ambiguity in causal judgment. seven

The breakthrough and innovation of interventionism is reflected in its ability to solve the problems left by manipulationism. The reason why interventionism can break the dilemma faced by previous theories is because of its "practicality". This practicality is reflected in two aspects: a new theoretical perspective and a unique theoretical tool. The brand-new theoretical perspective of

interventionism is that it gets rid of the ontology and reductionism commonly used by traditional philosophy in dealing with causality, and turns to epistemology and non reductionism. Once upon a time, the philosophical causality theory under the guidance of ontology including manipulationism thought that "what is the essence of causality and what is the composition of causality" is the primary problem to be solved. And just because people can only think about the cognition of causality, they can't directly answer the essence of causality, so most of the traditional theories adopt the strategy of reductionism, which interprets the existence of non causality as a component prior to causality. For example, manipulationist defines "human action" as causality, but human actions always lead to consequences, and this default behavior that will lead to consequences is itself causal, so it fell into a cycle. The epistemological perspective adopted by interventionism holds that "the nature and composition of causality" is not the primary problem to be solved. This makes them directly skip the ontology problem that plagues manipulationism. From the perspective of epistemology, "how to recognize causality" is the first question to be answered. In this context, they believe that the cycle does not constitute a problem for intervention, because they believe that this cycle is not malignant. Interventionism defines the causal relationship between X and Y by depicting the relationship between I and X, rather than the causal relationship between XY by depicting the relationship between XY. What is involved here is to use a causal relationship to describe another different causal relationship.

Secondly, the reason why interventionism can escape the shackles of anthropocentrism is that it uses the language of causal model as its theoretical tool. This is a bold "cross-border cooperation". Philosophy theory puts down the traditional pure speculative research ideas and uses the concepts in the field of mathematics and computer to solve problems. Causal model is an interdisciplinary research field, which originated from the statistical revolution in the 1920s. American biologist and statistician Whewell Sewall Wright made outstanding contributions to it. In the follow-up development, computer science, epidemiology and philosophy have made important advances in this field. [4] Causal model is essentially a set of models to describe causal relationship and carry out causal reasoning. The causal model describes the causal relationship in two parts: structural equations and directed graph. Both structural equation and graph can describe causal mechanism, and they are complementary to each other. When describing the same causal relationship, the structural equation describes the quantitative relationship and the digraph describes the qualitative relationship. Among them, the most basic component of structural equation is variables, and the set of all variables in causal model is referred to as V for short. Variables are causal terms in causal models. In traditional causal theory, causal terms are attributes or events. Variables are usually represented by uppercase letters, and variable values are usually represented by lowercase letters. The structural equation connects independent variables and dependent variables. Generally, a result variable is placed on the left side of the equation, and one or more cause variables are placed on the right side of the equation. For example, $X_i = F(P_{ai}, U_i)$, the left side of the equation is the result variable, the right side of the equation is the cause variable, P_{ai} represents the direct cause of the variable X_i, and U_i is the error variable, which represents the total effect of external variables outside the system on the system. The structural equation corresponds to the digraph and complements each other. The vertex in the digraph is the variable in the structural equation, and the arrow is the equation. For the same causal relationship, the corresponding relationship between the graph and the equation can be expressed in diagram.

The causality diagram represents the qualitative causality between variables in a visual way, so it is clear and easy to understand. The description of graphs often uses the language of genealogy. For example, the following figure is a directed acyclic graph (DAG) of the variable set V = {S, T, W, X, Y, Z}. The arrow from X to Y indicates that variable X is the parent of variable Y. And Pa (Y) represents the set of parents of variable Y. On the contrary, variable Y is the descendant of variable X, and De (X) represents all the children of variable X.

In this mechanism, "intervention" is defined as "assigning a specific value X_i to the X_i variable". Not only that, the process of this assignment will separate it from the equation that affects it, so that other equations in the causal model remain unchanged. Therefore, the definition of intervention by interventionism includes two aspects: the assignment of variables and the disconnection of variables from other variables in the system. The reason why intervention has the attribute of cutting off the relationship between the intervened variables and other variables in the system is that they emphasize that this intervention is "surgical". This kind of surgical intervention emphasizes

that the intervention will only affect the variables to be intervened. By means of structural equation and graph language, interventionism completed the description of "intervention of the unprepared". The intervention of the unprepared is reflected in the fact that what needs to be changed from human initiative in the previous theory has become "the change of variable values" and "the replacement of equations". The existence of human subjective initiative is eliminated, and the problem of anthropocentrism is solved. To a certain extent, interventionism does not "solve" these two problems, but skilfully "evades" these two problems by switching the perspective from ontology to epistemology. Specifically, "variable assignment" also has cycles and parts that human initiative can participate in. However, these two problems do not constitute problems to be solved in the system of interventionism, because the first problem of epistemology is to answer "how does human understand causality" rather than "what is the nature of causality". The problem itself is to portray human causal intuition, so the human centered perspective is no longer a problem. The reason why interventionism can get rid of the stereotype of traditional western philosophy is that it boldly changes the angle and way of dealing with problems.

5. How to build a theoretical system of philosophy with Chinese characteristics from the perspective of Interventionism

5.1 To build a theoretical system of philosophy with Chinese characteristics, a unique theoretical perspective should be determined

The success of the innovation of interventionist causality theory provides a new way of thinking for China to build a philosophical discipline system, academic system and discourse system with Chinese characteristics. The reason why interventionism can surpass the previous theories is that the theoretical vision and concerns brought about by the perspective of innovative theory. Therefore, in order to make Chinese philosophy reflect Chinese characteristics, we must establish our own theoretical perspective and theoretical direction, and master our own discourse system. In history, Chinese philosophy has walked out of a unique way. Western philosophy mainly focuses on ontology and epistemology, discussing the origin and composition of the world in an abstract way, and discussing which is more fundamental, the existence or the consciousness. Although Chinese philosophy also discusses these issues, it pays more attention to human nature, society and politics. These secular concerns coincide with Marx's point of view: "philosophers only interpret the world, and the problem is to change the world.". Therefore, whether it is to inherit the theoretical tradition of Chinese philosophy or adhere to Marx doctrine, China should be committed to building a practical philosophical theoretical system that can serve the development of socialism with Chinese characteristics. After determining the development direction of philosophy, we can determine the philosophical issues to be discussed in this perspective.

5.2 To build a theoretical system of philosophy with Chinese characteristics to answer innovative theoretical issues

To build a philosophy with Chinese characteristics, we should adhere to the attitude of openness and inclusiveness. The characteristics of interventionism are also reflected in the constant innovation and breaking through the routine of manipulationist schools, using the structural language of causal model with an open attitude, and finally forming its own unique theoretical tool. The theoretical system of philosophy with Chinese characteristics should take the study of major theoretical and practical issues of China's reform, development and stability as the main direction, and play a guiding role in Philosophy in the study and settlement of major issues related to the overall situation, fundamental and key issues of the party and the state. After clarifying the philosophical issues to be discussed from the perspective of Chinese characteristics, it is necessary to form a set of its own discourse system to answer these questions. With the development of society, this discourse system needs to incorporate new language to discuss contemporary issues. We should make good use of the advantages of a late comer, excavate history from the position of China, learn from foreign countries, and absorb and create philosophy theories close to the times.

5.3 To build the theoretical system of philosophy with Chinese characteristics, we should adopt the theoretical language close to the times

The reason why interventionism can guide the development of AI better than the previous philosophy is that it uses the symbol

language that can be most understood by computers. The 20th National Congress of the Communist Party of China proposed "accelerating the construction of a new development pattern and focusing on promoting high-quality development". The progress of AI industry will greatly promote the construction of a modern industrial system and the promotion of China's new industrialization. Any scientific and technological revolution and industrial revolution cannot be separated from the guidance of theory. Philosophy with Chinese characteristics is not an abstract theory, but to guide people's ideological and social development. Therefore, only by adopting the grounded gas theory language, can we better grasp the pulse of the times and form a Chinese philosophy with our care of the times.

The value of interventionist causality theory lies in its breakthrough in traditional philosophical thinking and its attention and grasp of the hot theory and technology of the times. Only innovative theoretical perspectives and theoretical tools can solve problems, get rid of difficulties and form theoretical characteristics. All of these are worthy of our reference in the process of building a socialist philosophy system with Chinese characteristics.

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