Journal of Human Cognition
2024, VOL. 8, NO. 1, 39-58
DOI: 10.47297/wspjhcWSP2515-469905.20240801

Understanding the Interaction Between Philosophy and Science in Contemporary Times—An Interview with Professor JIANG Yi

Yi Jiang, Lv Xue

School of Philosophy, Shanxi University, 030006 Taiyuan, China

ABSTRACT

The relationship between philosophy and science in contemporary times is closer than ever. From the methodology perspective, scientific and philosophical research has a clear sequential relationship. It is highlighted in the following aspects: 1. the methodology of scientific research, including theoretical assumptions and data modeling, parallels with apparent similarities in conceptual analysis and logical deduction in philosophy; 2. consistency of analytical argumentation methods in scientific research and philosophical research; 3. naturalism is currently a research approach that both scientific and philosophical research adopt. There has been a significant dispute over the relationship between philosophy and science among contemporary philosophers. This dispute focuses on the impact of scientific development on philosophy research. Nowadays, no one would deny the existence of this impact, but there is no consensus on the impact's nature, scope, and role. Wittgenstein's conception of certainty can provide valuable insights to understand the relationship between philosophy and science. In addition, we conclude the pragmatic turn in cognitive science because we misinterpret the cognitive scientists' emphasis on action as a practical claim and interpret the cognitive scientists' views with pragmatism. The theoretical analysis and research suggestions philosophers provide are becoming essential focuses in contemporary artificial intelligence research, including the interpretability of computer technology, the ethical norms of artificial intelligence technology, and the possible conception of human beings in the future. The interdisciplinary study of science and philosophy will achieve more significant development. In sum, understanding the nature of philosophy can be given a new explanation from a future perspective. The future outlook here refers to the starting point from possible world scenarios that can be conceived and traced back to all the facts happening in the present world, thereby giving an appropriate explanation to the real world.

KEYWORDS

1. XUE Lv: Hello, Professor Jiang! You have permanently attached great importance to the research on the relationship between contemporary philosophy and science. Your recent papers are also related to this topic. The rapid development of modern science has significantly impacted current philosophical research. In this era, the relationship between contemporary philosophy and scientific development is more complex and diverse, and the nature and research methods of modern philosophy also present different characteristics. What do you think about this?

JIANG Yi: Thank you for your question. Indeed, the relationship between contemporary philosophy and science is closer than ever in any previous century. After the "linguistic turn" in

philosophy at the beginning of the 20th century, modern philosophy pays more attention to human life and social activities in the empirical world. The "more attention" mentioned here is relative to the systematic transcendental philosophy in Europe in the 18th and 19th centuries, especially the German classical philosophy from Kant to Hegel. Although empiricism in modern continental philosophy regards empirical activities as the only criterion for obtaining knowledge and judging truth, due to the belief held by modern philosophers that philosophical activity is a different kind of enterprise from science, there has always been a distance between scientific research and intellectual exploration. Although philosophers such as Kant and Hegel were interested in the achievements of natural science research at that time, they always distinguished between scientific research and their philosophical tasks or reinterpreted the results of scientific research through their philosophical concepts. In particular, in the tradition of German classical philosophy, philosophy is defined as the "science of sciences," the highest wisdom above all sciences, so science can only be downgraded to the servant status of philosophy. However, after the rapid development of natural science in the late 19th century, the scientific concepts of modern philosophy were challenged seriously. The outstanding achievements of natural science constantly announced the death of philosophy. Under the challenge of natural science, philosophers actively adjusted their research methods and positions, trying to transform philosophy with scientific thinking and change philosophical thinking. Hence, modern philosophy came into being as contemporary analytic philosophy. After more than a century of evolution, although analytic philosophy is still criticized and challenged today in philosophy, some philosophical conceptions developed from this tradition are still widely recognized today, especially in the issue of the relationship between philosophy and science. One is gradually aware of a closer connection between them than ever before. So, I believe that today, with the increasing development of scientific research, when we discuss the nature and tasks of philosophy, we have to find new growing points in the relationship between philosophy and science.

You can see that reflecting on future philosophy is a vital core issue that I have been thinking about in recent years. I published an essay, Philosophical Reflections on Contemporary Science and a Prospect for the Future Philosophy, in 2021 and another, The Nature and Mission of Philosophy from the Future Perspective, in 2022. I am writing a third paper, "Philosophy and the Future: from the Perspective of Meta-philosophy," in 2023. In these papers, I mainly propose the following basic views regarding the nature and methods of current philosophical research.

First, since Wittgenstein and the Vienna Circle, regarding philosophical research as a clarification of meaning rather than theoretical construction has become a consensus in contemporary philosophical research. This conception is fully reflected in the analytic and European continental philosophy traditions, especially in the phenomenological tradition represented by Husserl's philosophy. No matter what different understandings philosophers have of the content of this philosophical activity, the emphasis on the activity characteristics of philosophical research, in a sense, which can also be called the practical characteristics, is already one of the essential features that distinguish contemporary philosophy from modern philosophy. This is closely related to the experimental activity of recent scientific research: philosophers are no longer satisfied with the work of "armchairs" and use "thought experiments" more.

Second, another essential feature distinguishing contemporary philosophy from modern philosophy is the emphasis on language. Regardless of how contemporary philosophers understand language here, the focus on language is undoubtedly a prominent feature of contemporary philosophy regarding the expression of knowledge and thought. Modern philosophy focuses on epistemology (knowledge) and truth (the being of the world), while contemporary philosophy focuses on language (expression) and meaning (understanding and explanation). This characteristic is also closely related to the development of science itself: the theory of relativity and quantum

mechanics have opened another window for contemporary philosophical research.

Third, understanding the nature of philosophy can be given a new explanation from a future perspective. The "future perspective" here refers to starting from possible world scenarios that can be conceived and tracing back to all the facts happening in the present world, thereby explaining the natural world appropriately. My assumed "future philosophy" is not a philosophy that will appear in the future but explained from a future perspective, i. e., not a future philosophy, but philosophy from the future.

Fourth, the way of studying future philosophy may have the nature of metaphilosophy, which should be the study of the way philosophy exists and the explanation of the future characteristics of philosophy. The three essential characteristics of philosophy—holism, transcendence, and vision—determine the three attributes of philosophy in the future: uncertainty, unpredictability, and openness. "Meta-philosophy" is a part of philosophical research and is foundational, just as a methodological study of philosophy belongs to Philosophy as a whole. Natural things (including wild things that are artificially modified and created) are the object of study of science; the supernatural (including all natural phenomena that science cannot explain) for theology; and something between science and theology for philosophy (as Russell said). In other words, the object of study of Philosophy is not only natural things but also supernatural things and even more non-natural things—namely, thought itself. Therefore, philosophical research reflects on the nature of philosophy, no matter what standpoint or perspective.

2. XUE: Since the 21st century, significant changes have occurred in human life, knowledge acquisition, and information exchange. The advancement of contemporary science and technology and the arrival of the information age have greatly challenged current philosophical research. What role do you think modern philosophy should play in this historical transformation to better respond to the challenges of the times?

JIANG: As I mentioned earlier, there is a closer relationship between contemporary philosophy and the development of science and technology than ever before. However, this connection does not mean that the two are entirely equivalent; rather, the existence of their relationship indicates their differences. The most significant difference between philosophy and science lies in that philosophy will not replace the work of science, and science will not replace the work of philosophy. Then, specifically, what has contemporary philosophy brought to the scientific revolution in today's scientific development? Namely, your question: What role has modern philosophy played in the historical transformation of the scientific revolution? I want to answer it from two aspects.

On the one hand, an essential feature of contemporary philosophy is the activity of clarification of meaning. Therefore, in the face of the achievements of the scientific revolution, a necessary task of philosophers is to clarify the theoretical explanations and conceptual uses in these scientific achievements, striving to provide a cleaner for scientific development. The cleaner here is not only to help explain the theoretical significance of scientific research but, more importantly, to criticize scientific research. In this sense, the nature of philosophical research is not a follower of science but a comrade-in-arms. This means that philosophers will always propose various explanations for the results of the scientific revolution and use these explanations to remind scientists to pay attention to potential problems or even dangers in scientific research. For example, a critical content of applied ethics research is to respond to ethical issues in different fields of scientific research.

On the other hand, unlike the purpose and methods of scientific research, the primary purpose of philosophical research is to provide human beings with a value for their thoughts, to prevent thoughts that are non-human or anti-human from encroaching on human thoughts and concepts; therefore, the research approach of philosophy mainly focuses on reminding and alerting human beings to constantly pay attention to and discover all harmful thoughts and theories that may harm human beings, especially in their relationship with scientific research, to prevent scientific research

results from bringing fatal harm to human beings. In this case, philosophy should be seen as the guardian of humans. There are two ways to achieve this: One, in a negative way, is to resist all thoughts and actions that harm human beings; another, in a positive way, is to recognize the unique advantages of human reason to sever the link between human reason and other irrational activities. The Frankfurt School and postmodern philosophical trend represent the former, while the analytic philosophy tradition represents the latter. Although they differ significantly in their theoretical concerns, they are the same in realizing the ultimate goal of philosophy.

From the above two aspects, it is easy to understand the role of philosophical research in the contemporary scientific revolution.

3. XUE: You have pointed out that the dependence of scientific research on philosophy and the reliance of philosophical research on science are mutually complementary and mutually explanatory relations, and there is no clear boundary between the two. From the methodology perspective, what are the similarities between scientific and philosophical research?

JIANG: It is challenging to draw a clear boundary between scientific and philosophical research for contemporary humans. For example, the theory of quantum mechanics, general relativity, and string theory in modern physics are difficult to completely classify as purely scientific theories. At the same time, contemporary experimental philosophy, neuro-philosophy, and techno-philosophy are complex enough to be considered strictly philosophical research. In my paper, The Role of Humanities in Cognitive Science: Reflecting upon the Boundary and Complementary Relation between Cognitive Science and Humanities, I pointed out that cognitive science as an interdisciplinary field of scientific research today is no longer purely natural scientific research. In this field, natural scientists and humanists work together in different ways to unveil the mystery of human cognition. Here, it is less critical to divide the boundary between science and philosophy strictly. Of course, this boundary blurring is not a result of human manipulation, that is to say, it is not a result of a particular theoretical viewpoint, but rather, in different fields of scientific and philosophical research, researchers have developed common research interests in the same problems and gradually formed a collaborative trend from their respective theoretical backgrounds. This is a result that both scientific research and philosophical research need together. Once we realize the necessity and urgency of this need, the alliance between science and philosophy will naturally come into being.

From the methodology perspective, scientific and philosophical research has a clear sequential relationship. This is highlighted in the following aspects. Firstly, the scientific research method adheres to observation and experiment and emphasizes theoretical assumptions. One of the most essential methods in contemporary scientific research is constructing digital models and obtaining support for theoretical assumptions through appropriate calculations. Whether explaining the cosmos and macrocosm (such as the Big Bang theory) or describing the mesocosm and microcosm (such as the neural central system), data analysis methods are used through modeling to construct an explanatory system to explain the observed phenomena and further propose explanations for the unknown world and fields. This methodological similarity between theoretical assumptions and data modeling parallels that of conceptual analysis and logical deduction in philosophy. Secondly, the consistency of analytical argumentation methods in scientific and philosophical research makes it easy to understand each other methodologically. Logical argumentation is an essential prerequisite for the certainty of all knowledge, and it is also the common source where science and philosophy initially formed. Traditional Aristotelian and modern mathematical logic emphasize the formal characteristics of thought composition, and they also obtain the determined meaning of knowledge through linguistic analysis. Under the premise of jointly advocating logical argumentation, scientific and philosophical research has always been on the same side. Even when scientific research gradually detaches itself from its intelligent parent to become an independent

research field, or when philosophical research tries to show an insurmountable gap between itself and scientific research, it demonstrates its views and positions through logical reasoning. Therefore, the analytical method becomes the main link connecting scientific research with philosophical research, and the critical marker is the formalized method of logical deduction. Thirdly, naturalism is currently a research approach that both scientific and philosophical research adopt. Scientific research always aims at explaining nature, and naturalism is a fundamental approach to scientific research. For scientific research, naturalism means starting from observation and experiment, and all theoretical assumptions and explanations ultimately need to be tested and proved through experiment. Therefore, naturalism is not a posteriori way in scientific research but rather an a priori way.

On the other hand, for philosophical research, naturalism is an a posteriori way. Overall, both ancient and modern philosophical research did not adopt naturalism as a method. That is to say, philosophers' argumentation is not based on their natural attitude towards theoretical objects. Instead, they had a transcendental attitude based on conceptions a priori. Although empiricists and rationalists have fundamentally different views on the source of knowledge, both believe that philosophical research differs from science in its primary methodologies. However, since the late 19th century, Western philosophers have gradually abandoned this belief and eventually accepted naturalistic research methods. This is closely related to the rapid development of modern science. Both in the analytic tradition and the continental philosophy, philosophers seem to emphasize a naturalistic tendency in the study of consciousness, which is particularly evident in the philosophical study of neuroscience in contemporary phenomenology (as in the theories of Alva Noë and alike). The naturalistic approach is the best philosophical research method in modern philosophy of mind, physics, and cognitive science.

4. XUE: You have always had international academic connections with renowned philosophers. Please briefly introduce the current attitude of researchers worldwide towards the relationship between contemporary philosophy and scientific development. How should we view the two theoretical perspectives within China's academic community, namely, "scientism" and "philosophical exceptionalism"?

JIANG: As far as I know, contemporary philosophers have always had significant disputes over the relationship between philosophy and science. This dispute focuses on the impact of scientific development on philosophical research. Nowadays, no one would deny the existence of this impact, but there is no consensus on the nature, scope, and role. Of course, achieving consensus in philosophy takes a lot of work. However, philosophers from different traditions will form their philosophical camps, mainly based on their different attitudes toward the relationship between science and philosophy. Overall, most philosophers still hold a cautious, optimistic attitude toward the impact of scientific development on philosophy, which can also be seen as an objective fact that they must accept. However, many philosophers still hold a negative or denial attitude toward this impact, which reflects a tendency of contemporary philosophy to try to get rid of the influence of science. Philosopher Sebastian De Haro from the University of Cambridge described the relationship between philosophy and science as a "love-hate relationship" in his published paper.[1] He comes up with three contentions to the effect that the natural sciences need philosophy: the fallacy of anti-philosophical (or: "to deny the need for philosophy, one must do philosophy"), why the historical argument fails (in an example from quantum mechanics, alive and kicking); and some domains of the intersection of science and philosophy and how the two can have mutual synergy. This positive attitude is mainly shown in the philosophy of science, mind, language, epistemology, and metaphysics of analysis. However, some scientists and philosophers have raised doubts about this

1 De Haro, S. Science, and Philosophy: A Love–Hate Relationship. *Found Sci* 2020(25): 297–314.

positive attitude, such as John McCarthy and Patrick J. Hayes's "frame problem" proposed in 1969, which points out the seemingly narrow logical problems in reasoning modeling logic. That is to say, robots that can only handle information within a limited range cannot take all actual issues. In 1978, philosopher Daniel Clement Dennett turned the frame problem into an "abstract epistemological problem." In 1987, philosopher Jerry Alan Fodor identified the frame problem as "the problem of how cognitive thought works," claiming that understanding the working principles of the mind requires unlocking the nature of induction correlation and rationality. The frame problem has been revealed as a profound but tricky philosophical problem.

Some scientists and philosophers also challenge the optimistic viewpoint about the relationship between science and philosophy. Regarding whether philosophy is needed for science, Steven Weinberg, a Nobel Prize winner in physics and a founder of the standard model in particle physics, eloquently argued that philosophy has done more harm than good to physics. Although it may sometimes provide good insights, usually, it's a straitjacket that physicists must eliminate. More radically, Stephen Hawking once wrote that "philosophy is dead." His reason is that philosophers often explored questions that physicists now take over. Scientists widely hold similar views, and they are also not concealing it. Neil de Grasse Tyson, a well-known figure in famous American science circles, publicly proclaimed with the same style that we understand the expanding universe and quantum physics, each of which goes far beyond what the entire community of philosophers can reason out while sitting in armchairs. They are essentially outdated.

On the contrary, some contemporary philosophers directly oppose explaining philosophical work with scientific research and even believe modern scientific achievements are harmful rather than beneficial to philosophical study. Therefore, philosophical research can only be done with science. Julian Friedland, an American scholar, published a paper in the philosophy column (the Stone) of *The New York Times* in 2012, stating explicitly that philosophy is not science because it adopts logical analysis and conceptual clarification as reasonable tools instead of empirical measurement. Strictly speaking, if this approach is implemented carefully, the produced knowledge can sometimes be more reliable and durable than science. Scientific measurement is always, in principle, adjusted at least to some degree in the light of future observations, whereas sound philosophical arguments can reach immortality. There are significant differences among contemporary Western philosophers' views on the relationship between science and philosophy, as are the divergences with modern scientists' views. Although I am optimistic about the relationship between science and philosophy, the Western philosophers I know have a negative or partially harmful attitude toward the relationship. For example, Simon Critchley from New York's New School, Dermot Moran from Boston College, Luca Maria Scarantino from IULM, Milan, Italy, Stefan Majetschak from the University of Kassel, Germany, etc.

Understanding the relationship between science and philosophy within China's philosophical community is also diverse and controversial. In my paper, I attributed these understanding conflicts to two main camps: "scientism" and "philosophical exceptionalism." The former essentially adopts the attitude of scientism towards philosophy and firmly believes in "the end of philosophy"; the latter is a philosophical optimism that the exception of philosophy cannot be replaced by science. I also view these two camps as extreme attitudes and positions on the relationship between philosophy and science. There are also many relatively moderate viewpoints between these extremes, including cautious optimism and limited scientism. Most people in the philosophical community still hold these moderate viewpoints. However, because extreme positions are more easily noticed in philosophical discussions, these opposing camps are often seen as the most representative. At the same time, the errors or fallacies of these two positions are also more easily recognized by people.

Judged merely from a logical perspective, we can see that both "scientism" and "philosophical

exceptionalism" are extremist positions that do not understand or refuse to understand each other's views so that they may argue with their spear against their shield. For example, in the eyes of "scientism," science will inevitably replace all knowledge research with its powerful force; if philosophy holds on to its knowledge, it will also be superseded by science. Therefore, the end of philosophy is inevitable. The assertion is based on a mistaken understanding of the nature of philosophy. Although the pro-science tendency in contemporary philosophy is modeled on scientific research, highlighting the knowledge nature of philosophical research, this does not mean that it has covered all areas of philosophical study or become the only correct answer for explaining the nature of philosophy. Even in contemporary philosophy, philosophers have widely differing understandings of the nature of philosophy. The tradition of analytic philosophy, closer to scientific research, has not entirely followed the path of "the end of philosophy."

On the contrary, due to various difficulties within its tradition, it is constantly expanding the scope and methods of philosophical research and altering some beliefs held by early analytic philosophers, such as the adherence to the rational and logical nature of language and the rejection of metaphysics. Therefore, once we give up the understanding that philosophy mainly pursues knowledge as its nature, both "scientism" and "the end of philosophy" will collapse. As far as I know, most Chinese philosophers who study the philosophy of science, history of science, and STS (Science, Technology, And Society) hold a relatively pessimistic position on the relationship between science and philosophy. They do not believe that the results of scientific revolutions will ultimately lead to the end of philosophy. Nor will they object to all non-scientific inquiry from the standpoint of scientism. Especially when facing contemporary cognitive science and artificial intelligence technology, most Chinese philosophers of science can maintain a calm and rational analytic attitude. They are aware of the ethical challenges posed by these latest technologies to the significance of human existence, and they are committed to spreading scientific rationality to the public and helping them understand the enormous changes and consequences brought by technological revolution to human life.

On the other hand, "philosophical exceptionalism" is an extreme philosophical position whose mistake completely excludes the factual impact of scientific research on philosophical research. Logically, the emphasis on the difference between philosophical and scientific studies is the original meaning of both because philosophy and science, at least in contemporary society, belong to different fields of study. Even highlighting the two's close relationship is based on their differences. However, "philosophical exceptionalism" views this difference as an unbridgeable gap between water and fire and believes that we can only safeguard the special status of philosophy by adhering to its incompatibility. This either/or style of thinking violates the logical principle of identity; that is to say, only two things with the exact nature can be seen as indistinguishable, but philosophy and science belong to different research fields with different natures. Therefore, they can be distinguished. However, "philosophical exceptionalism" attempts to explain the differences between philosophy and science with unique properties of philosophy; that is to say, it uses conclusions that need to be proved as premises for establishing them. "Philosophical exceptionalism" should demonstrate differences between philosophy and science rather than using these differences to prove the unique properties of philosophy. According to my observation, this claim is mainly advocated by some scholars engaged in the history of Chinese philosophy, intellectual history, and theoretical research in cultural and artistic fields. As a Chinese scholar, I can fully understand and sympathize with this position but cannot accept it.

5. XUE: We know you are a well-known expert on Wittgenstein in China, and you have unique insights into Wittgenstein's philosophical thoughts. In the early 1930s, Wittgenstein investigated the relationship between scientific research and his philosophical research. Could you introduce Wittgenstein's attitude towards the relationship between scientific and philosophical research?

JIANG: Wittgenstein had many discussions on the relationship between science and philosophy during different stages of his thought development, but these discussions all expressed similar views. In general, these views mainly include the following aspects.

Firstly, philosophical research and scientific research are different inquiry enterprises. Scientific research aims to discover truth, while philosophical research aims to clarify meaning. In the *Tractatus*, Wittgenstein first made a classic statement on the difference between the two: "All philosophy is 'critique of language.' " (TLP, 4.0031)[2] "The totality of true propositions is natural science in total (or the totality of the natural sciences)." (TLP, 4.11) "Philosophy is not one of the natural sciences. (The word 'philosophy' must mean something that stands above or below, but not next to, the natural sciences.)" (TLP, 4.111) "The purpose of philosophy is logical clarification of thoughts. Philosophy is not a set of teachings but an activity. A philosophical work consists essentially of elucidations. Philosophy results not in 'philosophical propositions' but in propositions becoming clear. Philosophy should make clear and delimit sharply the thoughts that are otherwise, as it were, cloudy and blurred." (TLP, 4.112) "Philosophy limits the disputable realm of natural science." (TLP, 4.113) "It should delimit the thinkable and thereby the unthinkable. It should limit the unthinkable from within through the thinkable." (TLP, 4.114) "It will indicate the unsayable by clearly representing the sayable." (TLP, 4.115) "Everything that can be thought at all can be thought clearly. Everything that can be stated can be stated clearly." (TLP, 4.116) Wittgenstein has clearly explained the nature of philosophy here, thereby explaining the difference between philosophy and science. Wittgenstein's explanation of the nature of philosophy remained consistent throughout his life, regarding philosophical research as an activity of clarifying meaning, which was his consistent belief. Although his views on philosophy changed at different stages of his thought, Wittgenstein's approach remained consistent in explaining the nature of philosophy.

Secondly, philosophy does not belong to any natural science, nor can it be explained as anything related to empirical science. Therefore, we cannot discuss philosophy in a genuine scientific way; conversely, any attempt to discuss philosophy in a simple scientific way is fruitless, and any proposition resulting from it is senseless. In this regard, Wittgenstein explicitly pointed out in the *Tractatus*: "The correct method in philosophy would be this: to say nothing except what can be said, that is, propositions of natural science—that is, something that has nothing to do with philosophy; and then, whenever someone else wanted to say something metaphysical, to demonstrate to them that they had not given a meaning to certain signs in their propositions. This method would be unsatisfying to them—they would not have the feeling that we were teaching them philosophy—but this would be the only strictly correct one." (TLP, 6.53) Indeed, Wittgenstein excludes philosophical propositions from ones in natural sciences in this way, which denies any close connection between philosophy and science. It seems surprising that it is tantamount to destroying the philosophy he is discussing and even indicates teaching philosophy is senseless. However, as we know, it is how Wittgenstein conveys his understanding of philosophy. He repeatedly told his students that he hoped they would not engage in philosophical research in the future, and his teaching philosophy aimed to make them give up philosophy. But we also know that the philosophy Wittgenstein wants his students to give up is not his or his understanding of philosophy but the traditional metaphysics of philosophy. The Vienna Circle advocates that philosophy is equivalent to science, and that's why Wittgenstein has never accepted their views.

Thirdly, scientific achievements cannot support philosophical research but only undermine the intellectual tower's foundation. Progress in science and industry cannot help philosophy and human thought; instead, it only endangers our moral concerns. In this case, Wittgenstein is more like an

2 Wittgenstein, Ludwig, 1921/2023: *Tractatus Logico-Philosophicus*, a new translation by Michael Beaney, Oxford: Oxford University Press.

anti-science advocate. However, Wittgenstein's genuine concern is not the relationship between science and philosophy but the problem of how we talk about philosophy scientifically, namely, the legitimacy of explaining philosophical propositions as scientific propositions. This means that, in his view, philosophical research is not like scientific research in providing us with definitions of things and explanations of phenomena but only describes our daily language use and reveals the mistakes of philosophical thinking by exposing our everyday language use. He wrote in *Philosophical Investigations:* "It was true that our considerations could not be scientific ones. It was not interesting to us to find out empirically that, contrary to our preconceived ideas, it is possible to think such-and-such--whatever that may mean. (The conception of thought as a gaseous medium.) And we may not advance any theory. There must not be anything hypothetical in our considerations. We must do away with all *explanation; description* alone must take its place. And this description gets its light, that is to say, its purpose, from the philosophical problems. These are, of course, not empirical problems; they are solved by looking into the workings of our language and in such a way as to make us recognize those workings despite an urge to misunderstand them. The problems are solved by not giving new information but arranging what we have always known. Philosophy is a battle against the bewitchment of our intelligence using language." (PI, §109) [3] This famous statement proclaims Wittgenstein's critical view on the nature of philosophy in his later years, which is consistent with his stipulation of the nature of philosophy in the *Tractatus*, that is, regarding philosophy as an activity that clarifies meaning in the early period and describing language games in the later period. Regardless of which kind of activity it is, philosophical research, in his opinion, is an entirely different activity from scientific research.

Fourthly, the work of philosophers and scientists is fundamentally different, but the work of scientists can be helpful to that of philosophers. Therefore, philosophical research needs the help of scientists, but the opposite is not valid. Wittgenstein expressed this view in his conversations with friends in the 1940s. He said, "At present, science is mainly dominated by engineering. And in this connection — in so far as it is dominated by engineering — it will have no use for philosophy. (Science can get along quite well without philosophy. I may speak of certain puzzles, but these won't interfere much. And while science is directed towards technology, philosophy will appear rather as a counterweight to science.) But science is what scientists do. And they are not always concerned with advances in engineering. They write systematic treatises on a subject, for instance. Say a treatise on Wave Mechanics. And where the scientist's work is concerned with what we may call clarification, philosophy may help him. Though this help may not be direct, — simply the fact that a certain form of philosophical investigation is going on." He also said, "Philosophy is contemplative and so not scientific. It concerns pointing out other possibilities and ways it might be done. 'Vielgestalt'. This may be important for understanding what sort of things and activities science is. But this is not anything that the scientist wants to be bothered with while he is doing science." [4] This shows that Wittgenstein's view on the relationship between science and philosophy is very clear-cut: He takes an anti-philosophical stance by regarding philosophy not as a purely interpretive activity but as an activity of using language.

6. XUE: The current scope of philosophical research is vast and has almost extended to all fields of human knowledge. The characteristic of philosophical research is to provide the meaning and justification for obtaining universal knowledge, while scientific research aims at getting universal knowledge. At the same time, the way the two deal with knowledge is also different. Russell said

3 Wittgenstein, Ludwig, 1953/2009: *Philosophical Investigations*. Revised 4th edition by P. M. S. Hacker, Joachim Schulte, Oxford: Blackwell.

4 Wittgenstein, Ludwig, Rush Rhees & Gabriel Citron. Wittgenstein's Philosophical Conversations with Rush Rhees (1939 –50): From the Notes of Rush Rhees. *Mind*, 2015(493): pp. 1-71.

science always focuses on obtaining specific knowledge, while philosophy has to choose between certainty and uncertainty. Wittgenstein discussed certainty, knowledge, and belief in his book *On Certainty*. What insights does Wittgenstein offer us in understanding the relationship between philosophical and scientific research from this perspective of certainty?

JIANG: This is a good question. Indeed, Wittgenstein completed *On Certainty* in his later years and profoundly reflected on issues such as certainty of belief and knowledge. His many topics are worthy of being discussed. The international philosophical community has published many enlightening views on this book, but our domestic scholars must pay more attention to it. I once participated in an international workshop entitled "Wittgenstein in the Era of Crisis" in July 2020, giving a keynote speech, "Late Wittgenstein on Certainty and Uncertainty," and expressing my understanding. The paper from the speech was published in 2022 with the same title in *the Journal of Shanxi University*. In the paper, I mainly analyze the structure and content of *On Certainty* and put forward a moderate reading of Wittgenstein's view on certainty and uncertainty. I argue that Wittgenstein sees certainty as a way of objecting to doubt rather than uncertainty, which is related to basic empirical facts rather than our knowledge. Only knowledge can have uncertain problems. Thus, uncertainty is not something Wittgenstein wants to reject, but something he tries to settle down in some beliefs. He acknowledges the uncertainty of knowledge and suggests looking for certainty in uncertainty. The uncertainty in this sense is instantiated in our language game. In addition, by the comparative analysis with pragmatism, Kierkegaard, and contemporary neuroscience, I argue that Wittgenstein's ideas about certainty and uncertainty do not change due to their similarities.

Wittgenstein's conception of certainty provides valuable insights to understand the relationship between philosophy and science. Firstly, Wittgenstein sees certainty as related to belief rather than knowledge, so the conception of certainty has a natural connection with philosophy. Philosophy is usually viewed as providing beliefs, primarily our beliefs about the external world and the inner world. The certainty of these beliefs is achieved through argumentation and reasoning. As Wittgenstein suggests, the determination of philosophical beliefs comes from our description of language games; this kind of belief determination does not require knowledge about language games to support it but only requires us to engage in these language games, that is to say, we need to experience the appropriate usage of daily language in the game. Therefore, philosophy determines beliefs through language activities without any uncertain issues, but there can only be a matter of acceptance or suspicion. We either accept a philosophy to confirm our beliefs or doubt a belief to abandon a philosophy. Unlike certainty, uncertainty should be related to knowledge, so only knowledge, not beliefs, can be uncertain. Philosophy pursues beliefs, whereas science explores knowledge; philosophy is associated with the certainty of beliefs, whereas science is related to the uncertainty of knowledge. This allows us to distinguish philosophy and science easily. Secondly, Wittgenstein attributes uncertainty to the scope of expertise and interprets the concept of truth as contextual categories, providing a new way to test the scientific knowledge-contextual truth view. In his view, mistakes can only occur in our language games, i.e., in the context itself. Truth only refers to something that has ground and cannot be denied, but it does not apply to the ground itself.

The basis is specific by itself because it is not valid or false. Wittgenstein pointed out explicitly that when we use the word "certainty," we express complete belief without any doubt. Therefore, we try to persuade others. This is subjective certainty. Certainty exists between truth and falsity questions, while there is no truth or falseness for the unwavering ground itself. Therefore, we must accept the bare assertion: knowing means there is no reason to doubt what one knows; doubt means there can be reasons to question anything without ground. Wittgenstein always claims that there is no question of truth or falsity in our beliefs and that only the facts we believe may be true or false. So, the question of truth and falsity is only concerned with science, which deals with facts, and

not philosophy, which deals with definite beliefs. The problem of truth discussed in philosophy is not concerned with the truth of philosophical propositions themselves but with the question of how to verify the truth and falsity of scientific propositions.

Thirdly, Wittgenstein proposed that uncertainty is the other side of certainty, but not the opposite, like the other side of a coin. If uncertainty is the opposite of certainty, they should belong to the same category. This illustrates that uncertainty and certainty belong to different categories, just as the body and mind do not belong to the same category. Context belongs to the category of uncertainty, but belief belongs to the category of certainty. Context determines meaning, which changes according to contextual changes, but belief stipulates certainty, excluding all doubt and fallibility. Since philosophy is always associated with the certainty of beliefs, while science is related to the uncertainty of context, philosophy and science belong to two different categorical systems, but not opposite ones. Hence, it can be seen that philosophy and science are not opposed but go hand in hand.

7. XUE: Nowadays, cognitive science is regarded as a new interdisciplinary field, which fully demonstrates the influence of contemporary philosophy on scientific and technological research in different forms. Some people believe there is a close connection between modern cognitive science and pragmatism. In what aspects do you think that the research of cognitive science has been influenced by pragmatism? Is there a close relationship between the two?

JIANG: Indeed, in 2013, the cognitive scientists Andreas K. Engel, Alexander Maye, Martin Kurthen, and Peter König published a paper in *Trends in Cognitive Sciences* entitled "Where is the Action? The Pragmatic Turn in Cognitive Science", explicitly proposing that cognition should be understood as the "interaction" between the perceiver and the external world, namely, a skillful activity. They pointed out: "The key premise of this view is that cognition should not be understood as providing models of the world but as subserving action and being grounded in sensorimotor coupling. Accordingly, cognitive processes and their underlying neural activity patterns should be studied primarily concerning their role in action generation. We suggest that such an action-oriented paradigm is conceptually viable and already supported by much experimental evidence. Numerous findings either overtly demonstrate the action-relatedness of cognition or can be re-interpreted in this new framework. We argue that new vistas on the functional relevance and the presumed 'representational' nature of neural processes will likely emerge from this paradigm." [5] This formally linked the practical action theory to cognitive science, thus promoting the development of the 4E model in cognitive science.

The Chinese philosophy community has also noticed this new trend in international cognitive science research and, in particular, has developed a special interest in the role of pragmatism in cognitive science. In May 2021, the Pragmatism Committee of the Chinese Society for Contemporary Foreign Philosophy, the Dewey Research Center at Fudan University, and the School of Philosophy at Zhejiang University jointly held the first conference on contemporary cognitive science and pragmatism, arguing that modern cognitive science increasingly emphasizes the understanding of mind from the perspective of action. This conceptual shift is the pragmatic turn in cognitive science. It holds that cognition is not a representation of the world that stops at "copying" it but rather an action that ultimately manifests as "dealing with" the world. This view of the unity of cognition (knowing) and action (doing) in the mind is highly consistent with the traditional epistemology of pragmatism, such that the Chinese academic community refers to action-oriented views in cognitive science as the pragmatic turn of cognitive science. In November 2022, the second conference was also organized by the same hosts, with topics including the pragmatic turn in

5 Andreas K. Engel, Alexander Maye, Martin Kurthen, and Peter König, Where's the action? The pragmatic turn in cognitive science, *Trends in Cognitive Sciences*, 2013(5): 202-209

cognitive science, pragmatic epistemology and the conception of mind, Marxist epistemology and cognitive science, comparative studies of pragmatism with cognition as "the unity of knowledge and action," with the connection between second-generation cognitive science (4E cognitive science), and with predictive processing theory. The Chinese academic community generally believes that with the emergence of 4E cognitive science (4E: embodied, embedded, enacted, and extended), cognitive science has shown an apparent pragmatic turn. This turn is summarized as two points: first, action-oriented cognition is not a deduction of a world model but rather a practical form based on sensorimotor coupling, with the ultimate goal of subserving action; second, the "habit" concept in classical pragmatism and social theory has increasingly become the focus of philosophical attention in cognitive science, serving as a medium for bridging different levels of cognitive science. Although challenged by predictive processing theory, this pragmatic turn has profoundly changed the research methods of cognitive science and impacted the foundation of social sciences. However, it is still too early to consider it a scientific paradigm revolution.

However, at the first conference on cognitive science and pragmatism, I delivered a keynote speech, "On Pragmatic Factors in Cognitive Science," expressing some degree of skepticism about the view of considering the movement towards action in cognitive scientific research as a pragmatic turn. The content of the speech was published under the same title in Issue 5 of *Zhejiang Academic Journal* in 2021. In my paper, I pointed out that pragmatism, as a method, mainly attaches importance to practice and action, experimentation and fallibility, and the interaction between individuals and their social environment. The process of pragmatism into cognitive science is the process of cognitive science's development and continuous expansion. However, I believe that cognitive scientists adopt pragmatic methods not because of the influence of practical philosophy on cognitive scientific research or because cognitive scientists actively accept pragmatism but because contemporary scientists reflect on the development dilemmas in cognitive science and strive to find solutions to these dilemmas. It is also a result of cognitive scientists and philosophers working together to explore cognition's nature and inner mechanisms. My view is different from the currently accepted idea. Among scholars who advocate for a pragmatic turn in cognitive science, they believe that current cognitive scientific research needs to rely on sensible methods to highlight the self-generating characteristics of human mental activities by attention to the interaction between practical actors and their external enthronement and also by attention on the influence of pragmatic behaviors and habits on cognitive science. However, in my opinion, pragmatism has not influenced cognitive scientific research at all. Cognitive scientists have not actively sought for their needed ideological resources from pragmatism. We conclude the pragmatic turn in cognitive science because we misinterpret the cognitive scientists' emphasis on action as a practical claim and, therefore, interpret the cognitive scientists' views with pragmatism and thus think that the research of cognitive science is influenced by pragmatism. Suppose there is any influence between the two. In that case, it can only be that pragmatic philosophers can draw inspiration from cognitive scientific research and take cognitive scientists' emphasis on action and activities as empirical proof for their claims to show the versatility of pragmatic methods.

8. XUE: It can be said that artificial intelligence is regarded as the most important scientific and technological progress in the 21st century. In the age of artificial intelligence, the relationship between philosophy and science is closer than ever. The philosophical research on artificial intelligence is voluminous, and the topics are also broad. For example, some artificial intelligence experts believe that philosophical reflection on artificial intelligence can help us better understand and examine human beings themselves. So, what research methods or paths should we take to conduct philosophical research on artificial intelligence from the perspective of contemporary philosophy and scientific development?

JIANG: As early as the 1970s and 1980s, the philosophy of artificial intelligence emerged, mainly

in the form of philosophical reflections on the limitations of computer technology, such as Herbert Dreyfus's works, *What Computers Can't Do*, published in 1972, and John Searle's paper "Minds, Brains, and Programs" published in 1980. From the available literature, we can see that philosophers and scientists have proposed valuable perspectives on philosophical reflection on artificial intelligence that are worth further consideration. According to the current understanding in the international intellectual community, essential views on the philosophy of artificial intelligence include (but are not limited to): if a machine behaves as intelligently as humans, it is as intelligent as humans (Turing test); all aspects of the learning or any other feature of intelligence can be described so accurately that a machine can be created to simulate it (Dartmouth Scheme); physical, symbolic systems have the necessary and sufficient means for general intelligent behavior (Physical Symbol System Hypothesis); an adequately programmed computer with the correct input and output will have a mind with the same meaning as a human having thoughts (Strong AI Hypothesis); reasoning is nothing more than a calculation of addition and subtraction to an agreed-upon result of a general name for labeling and representing human thought (Hobbesian Mechanism). However, the discussion around these issues is based on understanding fundamental questions such as the nature of human and artificial intelligence and the original problems of artificial intelligence and humans. Therefore, how to examine the nature of artificial intelligence from the source has become an important issue in contemporary philosophical research.

Firstly, the question of the nature of artificial intelligence is a metaphysical pursuit of artificial intelligence and a quest for human existence. Through analysis, it can be seen that artificial intelligence is a modern form of human exploration of the meaning of their existence, an essential attempt for humans to re-understand themselves, and a return to the original issues of humans. Artificial intelligence originated from the initial idea proposed by modern philosophers to simulate brain thinking. In contrast, in future development, fake intelligence issues are closely related to the original problems of humans, ultimately answering questions such as "Who am I?". Artificial intelligence issues can be truly understood only by attempting to answer similar questions. The starting point of philosophy is to reflect on the essence of human existence, and artificial intelligence completes the philosophers' pursuit of human existence by revealing the mysteries of intelligence. How to respond to this pursuit of artificial intelligence should be an urgent issue for current philosophical research.

Secondly, at the philosophical level, the primary question to be answered about artificial intelligence is its difference from self-consciousness. Although we have described the neural activity principles of the human brain at the neuronal level, we still need to answer the essential question of consciousness. Compared to the problem of the essence of consciousness, the most straightforward problem should be using the word "consciousness." In everyday language usage, "consciousness" refers to a particular mental state in which one is conscious. When we use this word, we consider some psychological activity, which is mostly the primary response of the perceiver to external stimuli. Although the reaction of the perceiver may not ultimately come from the external stimulus, the appearance of the response indicates the existence of a conscious state. It should be said that this is the most basic usage of the word "consciousness." However, when we further ask what we mean by the word "consciousness," we move to a more difficult part of the problem of consciousness.

Thirdly, the issue of machine thinking is the key to discussing artificial intelligence. Machine thinking is based on human thinking but has developed into a different form of thinking from human thinking. Machine thinking can fully achieve these abilities if we can explain human thinking ability as reasoning and creation. However, it is challenging to uphold the view that human thinking is irreplaceable by machine thinking or that human intelligence is generally superior to artificial intelligence and cannot be exceeded by it. The former believes that artificial and human intelligence

are entirely different species, so we cannot replace one. The latter insists that human intelligence is generally superior to artificial intelligence, so we cannot explain one with the other. The core issue here is whether machines can complete human-intelligent activities. Through analysis, we will see that machine thinking and human thinking are neither equivalent nor opposed to each other, but each has its responsibilities and complements each other. To some extent, the most direct result of the machine revolution in artificial intelligence technology is to prompt humans to re-think the inherent connection between machine thinking or computational thinking and human brains or human thinking and change our real lives through technological products.

Finally, from the perspective of simulating human intelligence with artificial intelligence, the practical significance of artificial intelligence is that it has an intelligence level and ability close to or even beyond human intelligence in a particular field, and knowledge acquisition is necessary for intelligence acquisition. Knowledge acquisition plays a vital role in the development of artificial intelligence, and people's confidence and concerns about artificial intelligence development are related to knowledge acquisition by artificial intelligence. From a philosophical analysis perspective, whether it is symbolism that emphasizes generative rules to impart knowledge, connectionism that believes that knowledge can be dispersed through simulating human brain neural structures and learning, or behaviorism that believes that intelligence is manifested as perception and action, they propose different paths for artificial intelligence knowledge acquisition based on understanding and simulating human intelligence and do not go beyond the idea of comparing with human intelligence or even replicating human intelligence. Artificial intelligence knowledge acquisition mainly lies in specialized knowledge areas, and artificial intelligence design has apparent purposefulness. Regarding current technological development, it isn't easy to imagine a situation where artificial intelligence entirely coincides with human intelligence as desired. Although research on unsupervised learning has received constant attention, there are still limitations on artificial intelligence knowledge acquisition. Examining the limits of AI knowledge acquisition helps us accurately grasp the difference between AI knowledge acquisition and human knowledge acquisition and then understand that AI knowledge acquisition cannot be compared with human knowledge acquisition in the sense of replacing or surpassing.

In summary, the philosophical reflections of contemporary philosophers on artificial intelligence have been directly related to the development of artificial intelligence technology, especially on the relationship between artificial intelligence and human intelligence and human existence. The theoretical analysis and research suggestions philosophers provide are becoming essential focuses in contemporary artificial intelligence research, including the interpretability of computer technology, the ethical norms of artificial intelligence technology, and the possible conception of human beings in the future. With the cooperation of philosophers and scientists, the philosophy of artificial intelligence has become the most active and promising field in philosophical research today.

9. XUE: Early in 2020, the sudden COVID-19 pandemic had an incredibly profound impact on the daily activities of all humanity, which not only brought new challenges to scientific research but also posed new challenges to philosophical research. In 2020, you were invited to give online special lectures on the impact of the COVID-19 pandemic at the School of Philosophy of Wuhan University and the School of Humanities and Social Sciences of Xi'an Jiaotong University. Given the current situation where the pandemic has brought disaster and changes to human social life, should the interactive research between contemporary philosophy and science be further deepened and valued? How can we philosophically reflect on the impact of the pandemic to remain rational and eliminate anxiety and restlessness? Could you please briefly talk about these two questions?

JIANG: Indeed, at the beginning of 2020, a sudden outbreak of the COVID-19 pandemic disrupted normal activities around the world, bringing comprehensive and profound impacts to the

daily lives of all humanity. This was the most significant natural disaster humans faced in the 21st century, threatening everyone's health and safety globally. Faced with such a major disaster, how should modern humans deal with the relationship between humans and nature, individuals and society, and the future of humanity? Such important issues are severely laid out for humans. Philosophers reacted to this epidemic at the beginning of its outbreak, reflecting on the impact of the epidemic on human life in unique philosophical ways of thinking. My relevant lecture was later published as a paper in *Philosophical Analysis*, a journal of the Shanghai Academy of Social Sciences, in 2020, titled "Individuals, Society, Future: Western Philosophers on the Impact of the COVID-19 Pandemic". In the paper, I note that philosophers re-examined major metaphysical issues from the perspective of philosophical ontology, including the stipulations of human existence, the relationship between humans and nature, the relationship between human psychology and human behavior, and the relationship between life and death. It involves the question of defining the existence of human beings in terms of the relationship between the individual and the other, the long-term coexistence of humans and viruses, how panic psychology affects human behavior, and human attitudes toward death. In epistemology, philosophers also put forward many different views on issues such as the limits of cognition, truth, and lies, understanding and misunderstanding, and the process of cognition, which can help us better understand human society's various reactions to the COVID-19 pandemic during the pandemic period.

Meanwhile, Western philosophers' reflections on the impact of the COVID-19 pandemic are mainly in the ethical domain, especially in issues related to human nature. The reflections provided by philosophers can better help people understand the ethical dilemmas brought by this pandemic to modern humans. These dilemmas mainly include the paradox of self-isolation, rethinking animal ethics, the relationship between individuals and society, and the relationship between exceptions and norms. The discussion on the impact of the COVID-19 pandemic in political philosophy has also become a hot topic among philosophers, including but not limited to issues such as globalization and anti-globalization debates, social equity and justice during the pandemic, the social responsibility of governments and the relationship between individual happiness and social groups and communities. It should be said that Western philosophers' reflections on the impact of the COVID-19 pandemic are comprehensive and in-depth, publishing many insightful views on issues related to individuals, society, and the future. In terms of research areas, these reflections involve almost all areas of Western philosophy. In terms of research background, these philosophers have made significant contributions in fields such as the history of philosophy, contemporary philosophy, analytic philosophy, moral philosophy, political philosophy, ethics, and philosophical anthropology, directly showing their professional research levels and demonstrating their professional spirit and practical concerns for responding to real social life and issues that people care about globally with their professional abilities. Among these reflections, Zizek, Agamben, Habermas, Chomsky, Singer, and Sandel's views have had the most influence internationally.

Of course, the above philosophical reflections mainly come from Western philosophers. There are also some illuminating views on the COVID-19 pandemic proposed by Chinese philosophers. These views mainly come from the fields of bioethics and political philosophy. The prominent representatives are professors Qiu Renzong and his team from China's bioethics community and scholars from many universities such as Renmin University of China, Fudan University, Wuhan University, Xiamen University, etc. They mainly expressed their concerns and views on the impact of the COVID-19 pandemic through public speeches, published papers, and accepted interviews from various social media. In particular, Chinese scholars have conducted objective analyses of the social impacts and political consequences of the COVID-19 pandemic by using traditional Chinese philosophical resources. This has also attracted particular attention from the international academic community. For example, Professor Bai Tongdong from Fudan University delivered a Confucian

political philosophical reflection on Western institutions during the 7th Nishan Forum on World Civilizations in 2021. Some scholars, such as Professor Liu Yong Mou from the Renmin University of China, have conducted political and sociological analyses on the impact of COVID-19 from a "science-technology-society" (STS) perspective. They focus on issues such as population and life systems, refined technological governance, and interest conflicts, which triggered the social concern of domestic and foreign scholars on the impact of the global plague. It is worth noting that associate Professor Tan Xiao from the Department of Philosophy at Capital Normal University published "The Communication of Knowing How During the Complicate Emergent Crisis" in *Studies on Science Popularization* in 2020. Through analyzing several prominent cases of scientific dissemination during the COVID-19 pandemic, she claims that public Know-how constitutes the choke point of science communication. Then she argues that this knowledge (knowing-how) where the public can be well guided differs from that of scientists and philosophers' expertise. Therefore, she suggests cultivating the public's know-how is the fundamental guarantee for responding to sudden and complex scientific events. This is an excellent example of applying the basic methods of philosophy of science to analyze the problem of public communication in the pandemic. However, from my limited understanding, there seem to be not many domestic philosophical papers on how to think about the impact of the COVID-19 pandemic in terms of the interaction between science and philosophy. I understand this can be roughly observed from the following aspects.

Firstly, the spread of the novel coronavirus is a social public health event and a life safety event faced by all humanity today, involving essential issues of human life. Therefore, how to choose the correct and effective pandemic prevention policy has become a crucial criterion for testing the social life view. The spread of COVID-19 is a social phenomenon, and how to explain this phenomenon has become an essential question for philosophers. As Professor Dermot Moran, former president of the International Federation of Philosophical Societies, said in an interview with reporters at the beginning of the outbreak, the COVID-19 pandemic is not only a scientific, medical or economic and sociological problem; the virus has also changed the way we live in the world, which is what phenomenology calls the "life-world." He believes that this large-scale pandemic may be related to the destruction of the natural environment, so we need to reflect on the relationship between man and nature and listen to experts' opinions. Philosophy learns from science, but at the same time, science draws on philosophy, considering the broader social and ethical implications of disease. We can't see viruses with the naked eye, nor do we see the values and norms that guide human behavior, including the thirst for scientific knowledge. Scientists can talk about viruses, and philosophers can talk about the value of the life world and its overall context. Finally, Professor Moran appealed that there is only one earth, and we must learn to live together.

Secondly, the outbreak of COVID-19 is an overarching revenge from nature for human kinds' harm and destruction. Still, it is also an opportune time to forge a broader alliance between science and philosophy. While the development of contemporary science has brought technological revolution and social changes to humanity, it has also put forward higher requirements and challenges for human intelligence and cognitive ability. We often say that the 21st century is the era of the biotechnology revolution. Still, when this era comes, we are not fully aware of and prepared for the crisis brought by biotechnology to humanity. These crises are not only technical but also conceptual. Scientists should be prepared for technological emergencies, and philosophers should be aware of them. To truly recognize these crises and be fully prepared, scientists and philosophers must work together to face the challenges these crises pose to humanity. Scientists and philosophers have already conducted collaborative research in cognitive neuroscience and artificial intelligence and have had some achievements.

Thirdly, modern scientific research carries out the exploration of nature and the universe in different dimensions. Whether in cosmography and macroscopical view or mesoscopic view and

microcosmic view, scientists try first to establish their specific field of research and clarify their research objects, which requires a prior world view, that is, the overall understanding of the field and object to be studied. In defining their worldviews, scientists are increasingly aware of the importance of philosophical thinking. This kind of philosophical thinking is not to arrange one's research in advance or provide some theoretical guidance but to explain one's research through logical argumentation to determine one's research method and even research means. Although some scientists claim that their study does not need the help of philosophy, their so-called philosophy refers more to past or existing philosophical theories than to intelligent ways of thinking. Therefore, in the face of critical fundamental problems in scientific research, scientists still need the help of philosophy. For example, the emergence of AI technologies such as the metaverse and ChatGPT has led to thinking about the philosophical presuppositions behind them. Similarly, the study on the origin of the new coronavirus and the related vaccine has prompted scientists to consider the intellectual factors of scientific explanation and social consequences.

Finally, from philosophical epistemology, philosophers can help people correctly understand the significant role of science and technology in modern society and adopt the appropriate methods in the face of major social events such as the COVID-19 crisis. In this case, philosophical research can provide an ideological weapon to society. At least one crucial thing to consider here is the way the facts are understood and the way they are interpreted in the face of the different effects of the dissemination of information. The former is an epistemological problem related to fact confirmation. At the same time, the latter is a cognitive communication problem related to information interpretation mode, but both are based on logical reasoning and intuitive judgment. The scientific research method is based on empirical observation and logical reasoning, while the process of philosophical research is rational speculation and logical reasoning. Methodologically, scientific and philosophical research is carried out with the help of logical reasoning, which is the reasonable basis on which they depend. In this sense, the interaction between science and philosophy is rooted in this common ground.

Of course, the above four aspects are still very abstract, more conceptual analysis than empirical argumentation. Still, all the problems involved have been reflected in actual scientific practice and verified through the interactive cooperation between scientific and philosophical research. For example, interdisciplinary collaboration in cognitive science research has produced many unexpected results, which have combined neuroscience with linguistics, philosophy of language, computer science, and other disciplines. Significantly, the traditional thought experiment model of analytic philosophy has brought a driving effect on neuroscience research. Therefore, the interdisciplinary study of science and philosophy will achieve more significant development in the post-pandemic era.

10. XUE: In recent years, you have been committed to bringing philosophy out of the ivory tower and into people's lives to show a clear way for the development of society. As you said, the most critical work in philosophy can do today is to criticize the issues of the times and reflect on life. Our philosophical research should be worthy of this significant era. How do you view the future of philosophy? What are the possible forms of future philosophy?

JIANG: Thank you for the compliment! I don't have the power to show a clear way for the development of society by philosophy. I am delighted if my work can help people better understand this society and themselves. Regarding "the future of philosophy," I mentioned before that the "future philosophy" I envision is not a philosophy that will emerge in the future but a philosophy explained from the perspective of the future. In my paper, A Philosophical Reflections on Contemporary Science: a Prospect for Future Philosophy, I claim that from the standpoint of future humans, all activities of modern humans rely on the progress of science and the invention of new technologies. With the increasing prosperity of science and technology, humans can no longer

survive without existing technological achievements. This makes humans constantly feel an apocalyptic sense, i.e., humans cannot escape the domination of technology in an era dominated by technology. People in every era will have anxiety and fear about the present and future, but the anxiety and fear faced by modern humans are far greater than those faced by humans in previous eras. We realize that the conflict between the present and the future is beyond our control, and the uncertainty of the future is precisely our expected response to the inability to control the unpredictable truth.

Therefore, how to correctly view the relationship between philosophy and science and maintain a stable balance in the development of science through philosophical reflection is the vital work that future philosophy needs to complete. When contemporary philosophers explore the nature of the human mind and cognitive activities, they need to borrow from the latest scientific research findings. Still, there are other goals of philosophical research itself. The main work of philosophers is not to provide logical arguments and conceptual support for the development of science but to examine and clear away theoretical difficulties and ideological obstacles in scientific development. Philosophers are the cleaners and reminders on the road of scientific development. Scientists may say that they need philosophy but not philosophers, but philosophers must say that they not only need science but also scientists. They need science because scientific research provides the necessary content for philosophical thinking; they need scientists because scientists need philosophy to offer ideological guarantees to their study. This interactive relationship between philosophy and science ensures the scientific nature of philosophical research and the philosophical prerequisite for scientific research. As for possible scenarios of future philosophy, my paper mainly seeks inspiration from the interaction between philosophy and science. Future philosophy should be open to the future; as SUN Zhouxing said, "The future is the front sight of philosophy."[6] Focusing on history is the main work of the history of philosophy, while only facing the future is where philosophy lies. The continuous development of contemporary science and technology provides the necessary conditions for the formation of future philosophy, and future philosophy will also offer essential prerequisites for the development of science and technology. This is my basic understanding of future philosophy.

As for the possible forms of future philosophy, I have analyzed this in another paper, Philosophical Studies Today: Dilemmas, Challenges and Key Problems. In the paper, I claim that the main difficulties faced by current philosophical research come from both internal and external reasons. External reasons come from challenges to humanities posed by modern social changes, while internal reasons come from a need for more confidence in the driving force for philosophical development. The main difficulties in philosophical research come from challenges posed by scientific and technological progress, philosophy into a post-truth era, and restructuring historical texts. The main issues discussed in contemporary philosophical research include the relationship between technological development and human futures, changes in the social constitution and human behavior, artificial intelligence and human dignity, the relationship between political philosophy and political life, normativity and normative ethics, traditional deterministic thinking mode in philosophy and contemporary philosophy's pursuit of uncertainty, cognitive scientific, philosophical studies, as well as modern forms of metaphysical and ontological studies. Philosophical methodology is an essential foundation in contemporary philosophical research, and mastering the overall thinking and comprehensive philosophical research will help us better understand modern philosophy. The main questions raised in recent philosophical research should foreshadow the primary forms that may emerge in philosophy: techno-philosophy, social philosophy, robot ethics, philosophy of cognitive science, neonatology, meta-philosophy, etc.

6 Sun, Zhouxing, Future is the Front sight of Philosophy. *Social Sciences Weekly*,2017(1561):6.

11. XUE: Your earliest research was on Wittgenstein, then you shifted to the philosophy of language in the mid-stage, and recently, you turned to the study of cognitive science. What is the inner line of thought behind this gradual development? Is it also in response to the development of the times?

JIANG: Thank you for your attention to my work stages! Starting from my graduate studies in the 1980s, I have worked within the tradition of analytic philosophy, from Russell to Frege to Wittgenstein, and throughout the history of analytic philosophy. In my view, unlike other traditions in contemporary philosophy, analytic philosophy has been closely related to the development of current science since its inception: modern logic was the initial impetus for the emergence of analytic philosophy; modern physics was the initial object in studies of analytic philosophy; and contemporary science is the primary source in the development of analytical philosophy. From quantum mechanics to relativity theory, from information theory to control theory and then to system theory, from modern mathematics to modern logic, from modern linguistics, computer science, neuroscience to artificial intelligence, from cognitive science to the Big Bang theory of the universe, every step in the development of modern science is naturally connected to analytic philosophy. Most contemporary analytic philosophers are also scientists in different fields. This is also one of the essential reasons I am interested in exploring the relationship between modern philosophy and scientific development. Let's say that the development of contemporary science has driven changes in society as a whole. Philosophical research closely related to recent scientific development will inevitably reflect these changes directly or indirectly through changes in ideological concepts and participation in this social change. If my research interests have changed, it is also driven by the shift in this era, which is a natural result of societal changes. I have paid close attention to every progress made by contemporary scientific development, from quantum mechanics to superconductivity theory, system theory to complex science, Turing ' s test to artificial intelligence, and AlphaGo to ChatGPT. The latest scientific and technological developments have fascinated me immensely. Although I am not a scientist or technologist and lack a professional understanding of the scientific contents, I have become interested in the rational motivations behind these scientific and technological achievements from their astonishing effects. Through my studies, I have developed ideas about machine learning theory in artificial intelligence, the relationship between artificial intelligence and human intelligence, and machine consciousness. Of course, my papers still have preliminary views and are challenging to say to have profound ideas. Still, I always hope to demonstrate the philosophical significance of contemporary scientific development achievements through conceptual analysis and explain the rational basis behind science and technology with clear logic.

Finally, thank you very much for the interview! It allowed me to systematically organize some of my research work in the past ten years. It allowed me to re-understand the interaction between contemporary philosophy and scientific research.

(Translated from the first issue of the Chinese edition of *Cognitive Science*, 2023, by PAN Lujia and revised by JIANG Shiqiang. Professor JIANG Yi has reviewed the translation.)

References(A List of Professor JIANG Yi ' s Publications on the Topic in Recent Years)

[1] *Philosophical Analysis of the Issues of the Times*, Beijing: Chinese Social Science Press, 2022;

[2] Philosophy Should Answer the Issues of the Times. *Guangming Daily*, 27, 5,2019; *Xinhua Digests*, 2019(15);

[3] Conceptual Analysis of the Distinction of AI and Self-consciousness. *Journal of Dialectics of Nature*, 2019(10):1-7;

[4] Philosophical Studies Today: Dilemmas, Challenges, and Key Problems. *Journal of Shanxi*

University, 2019(5):1-14;
[5] The Role of Humanities in Cognitive Science: Reflections on the Boundary and Complementary Relation between Cognitive Science and Humanities. *Journal of Nanjing University*, 2019(5):108-115;
[6] Philosophical Analysis of Various Approaches to Machine Thinking. *China Social Sciences Review*, 2019(4):68-75;
[7] Artificial Intelligence and the Original Question of Human Being. *Social Science Front*, 2020(1):207-213+282;
[8] Individual, Society, and the Future: Western Philosophers on the Impact of the Covid-19. *Philosophical Analysis*, 2020(6):160-175;
[9] On the Interaction of Contemporary Philosophy and the Latest Science and Technology. Co-authored with CHEN Jiangkun, *Beijing Philosophical Circle 2019*, Beijing: Central Compilation and Translation Press, 2021:154-170;
[10] Philosophical Reflections to Contemporary Science and a Prospect on the Future Philosophy. *Social Science Front*, 2021(7): 1-11; *Universities Social Science Digests*, 2021(9): 29-30; *Social Science Digests*, 2021(9):87-89; *China Social Science Digests*, 2021(12):51-52;
[11] On Pragmatic Factors in Cognitive Science. *Zhejiang Academic Journal*, 2021(5):137-143;
[12] The Nature and Mission of Philosophy from the Future Perspective. *Social Science Front*, 2022(5):1-9; *Xinhua Digests*, 2022(19):59-63; *Universities Humanities Academic Digests*, 2022(4):23-24;
[13] Late Wittgenstein on Certainty and Uncertainty. *Journal of Shanxi University*, 2022(3):1-9;
[14] From Philosophy of Technology to Philosophy of Engineering: A Shift of Research Paradigm in Philosophy. *Zhejiang Academic Journal*, 2023(5):65-72;
[15] On the Mutual Interaction of AI and Human Intelligence. *Journal of Dialectics of Nature*, 2023(11): 14-25;
[16] Understanding the Interaction of Contemporary Philosophy and Science: Interview with Professor JIANG Yi. *Cognitive Science*, 2023(1):84-109.