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Susan Haack's View of Science and Its Enlightenment to Science Education: Based on Defending Science within Reason

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Abstract

On the basis of criticizing old deferentialism and new cynicism, Susan Huck, in her important work Defending Science within Reason, comprehensively demonstrated her Critical Common-Sensism scientific view, avoided the extreme position of old deferentialism and new cynicism, reconciled the conflict between the two positions, and rationally defended science. The educational world is a field where various scientific views clash. We should learn from Susan Huck's middle position in Critical Common-Sensism scientific view and rationally defend scientific education.

Keywords

Old deferentialism, New cynicism, Critical Common-Sensism scientific view,scientific education.

1. Introduction

Defending Science within Reason: Between Scientism and Cynicism is one of Susan Haack's important representative works. On the one hand, Haack criticized the excessive compliance of the Old Deferentialism to science and regards anything put forward by science as authority. On the other hand, Haack also criticized the excessive suspicion of science by New Cynicism which believes that there is a strong interest in any scientific conclusion. Looking at the whole book, we can deeply understand that Haack has been trying to use a kind of precious "mild" scientific pragmatism principle to transform or even integrate various popular extreme attitudes towards science at that time, and initially tried to make a more rational review of science. Therefore, Haack put forward her Critical Common-Sensism scientific view, so as to achieve the purpose of defending science rationally. In the field of education, the views on science education are easily influenced by different scientific trends of thought. Although modern scientific thoughts and post-modern scientific thoughts seem to be opposite, they have the same attitude towards Science - extreme. Therefore, Haack's Critical Common-Sensism science view teaches us how to defend science education rationally.

2. Haack's Criticism of Old Deferentialism and New Cynicism

Defending Science within Reason: Between Scientism and Cynicism begins with the chapter Neither sacred nor a Confidence Trick: The Critical Common Sensist Manifesto, and ends with the chapter Not Till It's Over: Reflections on the End of Science. It consists of 12 chapters. In the book, the author quoted from other sources, quoted from the classics, and used fluent and gorgeous words to present us with an extremely beautiful picture of science, and at the same time, it also brought us a feast with the most graceful attitude towards science. At the beginning of the book, Haack wrote that attitudes to science range all the way from uncritical admiration at one extreme, through distrust, resentment, and envy, to denigration and outright hostility at

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the other [1]. The two extremes are what Haack called Old Deferentialism and New Cynicism, which are also the two sides of the science war.

Haack did not give a definite definition of Old Deferentialism, but mentioned that Old Deferentialism thought that science has its unique epistemological authority because of its unique objectivity and rational inquiry method. Although there were many obstacles and counterviews, such as Hume skepticism about induction, the paradoxes of confirmation, Russell Hanson's and others' thesis of the theory-dependence of observation and so on, these obstacles were considered to be surmounted or it can be avoided[2]. Obviously, in a sense, Old Deferentialism is scientism. Haack criticized that the Old Deferentialism exaggerates the obedience to science, regards anything put forward by science as authority, discards any criticism of science or scientific practitioners, and regards it as an anti-science prejudice.

Although the New cynics did not agree with each other in details, they consistently insisted that the supposed ideal of honest inquiry, respect for evidence, concern for truth, is a kind of illusion, a smokescreen disguising the operations of power, politics, and rhetoric[3].They also believed that the preference for the use of "facts", "evidence" or "rationality" is merely ideological deception to cover up the exclusion of this or that oppressed group. Science does not have a special epistemological authority, nor does it have a unique method of rationality. In fact, science is only political. The New Cynics includes radical sociologists, feminists, multiculturalists, radical literary theorists, rhetoricians, and semiologists, and philosophers outside strictly philosophy-of-science circles. In a sense, it is anti-scientism. Haack also criticized it as exaggerating its doubts on science and believing that there is a strong interest in any scientific conclusion.

3. The Critical Common-Sensism view of Science

In Haack's view, Old Deferentialism and New Cynicism are both correct and unreasonable. She tried to find a fulcrum of balance between orthodox philosophy of science and alternative philosophy of science, and outlined a new picture. As Haack herself commented, Defending Science within Reason: Between Scientism and Cynicism is a very ambitious book, in which it not only try to understand the epistemology and metaphysics of science, but also try to describe a more general picture of the position of Science in inquiry and in people's life[4]. Therefore, she put forward her Critical Common-Sensism scientific view, and believed that this view can change the over optimism of Old Deferentialism, and do not have to yield to the New Cynicism of man-made despair.

On the basic attitude towards science, Haack stuck to the "moderate" attitude of merging the two poles. In Haack's view, in the science war, although everyone is partially right, they are all wrong. Therefore, the correct position should be to absorb their correct parts and move towards a compromise position. In Haack's opinion, scientism has overemphasized science, and anti-scientism has over doubted science; what science is like should be analyzed in detail, not in a general sense; natural science should be treated with mild respect; science is neither sacred nor a confidence trick.

On the issue of scientific truth, Haack not only insisted that science is truth, but also advocated the pluralism of truth. Haack pointed out that the development of science is not the simple accumulation of truth, but the cause of understanding the world. Therefore, what science pursues is substantive, meaningful and illustrative truth, which can answer the substantive and meaningful questions raised by scientists. Haack's view of truth is actually a practical solution to practical problems. According to Haack, science can not guarantee that new truths will be added constantly, nor can guarantee that it will approach truth step by step on a certain issue. She also believed that science is moving towards truth, which is manifested in the remarkable

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success of science and in the empirical stability of science. However, science is not the only source of truth, but one of many sources.

On the issue of the value of science, Haack not only thought that science is valuable, but also emphasized that it has no privilege. She pointed out that the remarkable success of science has proved the value of science, which is conducive to human well-being; natural science has expanded the scope of human cognition, which is a kind of value in itself; natural science advocates the honesty of intelligence, which not only helps science to pursue truth, but also is a moral advantage. However, recognizing the value of science does not mean denying other values, nor does it mean that the value of science is higher than other human activities. Haack thought that the scientific method has been successful, while that there is no essential special method in science.

Generally speaking, in the basic attitude towards science, Haack insisted on the "moderate" attitude of merging the two poles. After the smoke of gunpowder in the scientific war, some people began to reflect calmly on the positions of the opposite parties, trying to get rid of the extreme and move towards a "middle way". Haack is one of the most successful. Her Critical Common-Sensism opened up a possible way to examine science.

4. The Conflict between Science and Anti-scientism in the Field of Pedagogy

Pedagogy is a field where all kinds of scientific views collide. The mutual criticism between Old Deferentialism and New Cynicism in philosophy will also continue to the field of pedagogy. Different views have been formed on how to treat science education and what position science should be in.

Since modern times, science has made remarkable achievements in the practice of conquering and transforming nature. On the one hand, the great development of science has brought about the social demand for science education, on the other hand, the philosophy of science has gained a leading position in the ideological field. Thus, from the Enlightenment Movement, the scientific education view of scientism was finally formed. The education of every capitalist country in the world has changed from the Classical Humanities to the modern scientific education which mainly focuses on mathematics and natural science. Claude Adrien Helvetius once pointed out that scientific knowledge is the foundation to help people improve spiritual civilization and life happiness index, and natural science should be the first choice of education. Physics, chemistry, astronomy, mathematics and other natural disciplines also occupy an important position in Denis Diderot's Plan of A University for the Russian Government. He believed that mastering scientific knowledge is a powerful weapon for people to get rid of religious ignorance. Herbert Spencer put forward a conclusion in his Essays on Education: what knowledge is the most valuable? The consistent answer is science[4].In the current education, science education has been pushed to the absolute dominant position. It is mainly manifested as follows: science education has a special important position in the education system, which is hard to compare with liberal arts education; in the field of higher education, it is mainly higher engineering education; in the stage of basic education, it is mainly the education of science courses; as a kind of universal values, intellectual education is the most important, which has spread from school to other fields of family and society. College students and teenagers have a common problem of weak personality cultivation and cultural quality.

On the other hand, it is anti-scientism represented by postmodernism. Post modern scientific view has its profound historical background. Since the 20th century, there has been a so-called "physics crisis" in the West. Albert Einstein's Theory of Relativity and Max Planck's quantum mechanics, especially Werner Karl Heisenberg's uncertainty principle, have broken the concept of time and space in classical physics, and there has been a physical revolution. In some people's

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opinion, the certainty, objectivity and truth of scientific knowledge have been broken. Since the 1960s, there has been a scientific historicism represented by Thomas Sammual Kuhn and Paul Feyerabend in the field of philosophy of science, which advocates constructivism and historicism. Under the influence of postmodernism and on the basis of Sociology of knowledge, since the 1980s, the sociology of scientific knowledge (SSK) and post colonial science and feminist scientific thoughts have emerged in the West[5]. As a result, the postmodern scientific outlook characterized by relativism, subjectivism and even anarchism has finally formed. Under the influence of anti-scientism represented by postmodernism, the status of science education has also been questioned, and there has been an anti-scientific tendency, which is mainly manifested in the devaluation of science and the promotion of liberal arts. On the one hand, the anti-science theorists directly belittle the significance of science education, regard science education as the teaching of skills, and claim that science can only teach people to learn to be skillful, to pursue practical benefits, and to lose one's ambition. What's more, science is regarded as a harmful discipline, and science education will lead to the loss of human nature and moral degradation. Maritain, a representative of the New Thomasim of education, once denounced that science has brought about a fatal disease that denies eternal truth and absolute value. On the other hand, many anti-science theorists dare not slander science education openly because of the great welfare and prestige brought by science. In order to seek camouflage, they put the humanities, especially the Classical Humanities and traditional cultural disciplines, as the antithesis of scientific disciplines, and unilaterally promoted and advocated the role of these humanities, thus implicitly expressing the denial and censure of science education. The harm of anti-science thought should not be underestimated. On the one hand, it has directly become an obstacle to the development of science education and has led to the damage to science education. Over the years, there has been a countercurrent in American educational circles, which advocates that evolutionism should be abolished and creationism should be replaced. On the other hand, the spread of anti-science thoughts also encourages the force of retro and conservative education, and suppresses the consciousness of education facing the future, enterprising and innovative. Although anti-scientism in education can alert people to pay attention to the negative effects of scientific activities, it denies the great role of science in social progress and the significance in promoting the all-round development of human beings. It is essentially a retrograde to the trend of historical development.

5. Defend Science Education Rationally

As Thomas Reid said, "That men should rush with violence from one extreme, without going more or less into the contrary extreme, is not to be expected from the weakness of human nature." Indeed, in the history of human thought, there have been countless sharp oppositions between the two poles, such as truth and opinion, matter and mind, rationality and irrationality, modern and post-modern, structure and post-structure, as well as the Old Deferentialism and New Cynicism put forward by Haack. Although extremes may bring in-depth understanding of things, they often bring one-sided views, which is not conducive to a comprehensive and appropriate view of things.

In the West, Aristotle, an ancient Greek philosopher, put forward the idea of the Golden Mean when he talked about ethics. He thought that virtue is good, too much or less is evil. In the East, China's philosophers also proposed a middle course to avoid leaning to either side.The middle way position is extremely intelligent. On the issue of science, Haack also tried to avoid extremes and took the position of the mean. She believes that science is not sacred: like all human enterprises, it is thoroughly fallible, imperfect, uneven in its achievements, often fumbling, sometimes corrupt, and of course incomplete. Neither, however, is it a confidence trick: the natural sciences, at any rate, have surely been among the most successful of human enterprises.

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In modern times, science is not only the first productive force, but also permeates all aspects of social life and becomes an important spiritual force. In this case, science, as a culture, has a more basic and universal quality meaning. Any person, no matter what occupation he will be engaged in, must have basic scientific literacy. Otherwise, he can not become a qualified citizen in the contemporary society. Of course, he can not be regarded as a person with all-round development. He must always put science education in an important position, even in the first place. The anti-science theorists in education can't see the educational function of science. On the contrary, they blame science itself for the abuse of science and regard science as the enemy of human nature. But at the same time, we can not put science education in the supreme position, regard science education as the only purpose of education, ignore or even deny the importance of other education (such as humanistic education). In this way, we can abide by the middle way and be impartial in the treatment of science education.

In dealing with the problem of science education, scientism is not advisable, nor is anti-scientism. We should learn from Haack's Critical Common-Sensism to defend science rationally and science education rationally.

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