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REALISM AND ANTI-REALISM IN THE
PHILOSOPHY OF SCIENCE



Tscha Hung with C. G. Hempel, Vienna 1982.

REALISM AND ANTI-REALISM IN THE PHILOSOPHY OF SCIENCE

Beijing International Conference, 1992

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PREFACE

This book contains the main papers from the first Beijing International Conference on Philosophy of Science, held in 1992 and dedicated to issues of 'Realism and Anti-Realism in Science'. The Conference was organized by the Chinese Society for Dialectics of Nature (Philosophy of Nature, Science and Technology), and sponsored by the China Association for Science and Technology (CAST), the China International Conference Center for Science and Technology (ICCST), the Boston University Center for Philosophy and History of Science, the International Union of History and Philosophy of Science through its Division of Logic, Methodology and Philosophy of Science (IUHPS/DLMPS), and by Mr. Joseph C. T. Lee of Hong Kong. The Organizing Committee was chaired by Qiu Liang-hui, the Programme Committee by Robert S. Cohen, but we are especially mindful of the responsible role of our real 'Secretary-General' Qiu Renzong and his endlessly helpful colleague Ju Zhang.

The Conference was blessed by the late Professor Tscha Hung who had hoped to join with us, with Chinese and non-Chinese alike. He had for many years been Director of the Institute for Foreign Philosophy at Beijing University, and indeed for decades of thinking and teaching Tscha Hung was a link between the 'scientific philosophy' of his logical empiricist Vienna and the new time of China after the Second World War. Both the teacher and also the critic of his own mentors and colleagues, he was a scholar who quietly carried the roles of being the Ayer and Hempel of China.

Where might philosophy of science within China be located today? As in the West, modern Chinese philosophers deal with issues in addition to those of science, technology, medicine and the natural world, and they do so within various frameworks, some from traditional Chinese civilization, some from the currents of classical, modern and post-modern Western sources, others within a Chinese Marxist outlook. Philosophy of science however is especially needful of, and open to, international collaboration and mutual learning. Like the sciences, like mathematics, physics, biology, chemistry, computer science, modern logic, nuclear

engineering, like Western medicine and surgery, so philosophy of the sciences should be a field of international cooperation. This Conference was a contribution to the extension of such cooperation in philosophical clarification of the currently living concerns about science, among scientists as well as philosophers.

The renaissance of this endeavor in the People's Republic was evident at this conference, among younger and elder scholars from every part of China. The restrictions imposed by dogmatic habits or doctrines, so hurtful to the honest progress of science and certainly of its philosophical understanding, are hopefully behind our times (however difficult it may be to be freed from habit and its rituals). Even that contentious phrase from old Engels, adapted from Hegel, the 'dialectics of Nature', may be seen to be a suggestive problematic for scientific theorists, or perhaps as heuristic for philosophy of nature and of science-in-society. And within science, 'materialism' may be realist, objectivist, but not thereby opposed to theoretically conceived entities or forces or whatever the scientific imagination may conjure forth. So, 'realism', whether another 'neo-materialism' or not, is an epistemological issue, an ontological puzzle, and even a target for the pragmatic 'realist' of a different sort. Is there a new 'idealism' within the social constructivist interpretations of today, even within the cultural anti-science which has arisen? Our Conference dealt with such matters, perhaps without sufficiently vigorous exposition of the case for anti-realism but the reader will judge.

I am reminded of a contrast drawn by the British philosopher Winston Barnes many years ago. Barnes said that the idealist holds that "There is a Mind with a world in it", while the materialist holds that "there is a world with minds in it". Now we have many-world theories, and non-reductive emergent realisms, and non-ontological non-idealist anti-realisms. The issues were before this gathering of speakers and participants, and revised for this book. What would our friend Tscha Hung have thought?

Robert S. Cohen
(for the editors)

RECOLLECTIONS OF TSCHA HUNG

I first learned of Tscha Hung in 1955 during conversation with Marie Neurath. Ten years earlier, on the last day of Otto Neurath's life, Tscha Hung had come to Otto at his home in Oxford, to talk once more about protocol sentences and the Schlick–Carnap–Neurath debates. Who was this Chinese philosopher, I wondered, and why was he in Oxford, concerned about clarifying logical empiricism, in 1945? But Marie had no notes of Otto's conversations with Tscha Hung, only a pleasant memory of the visitor's sweet and inquisitive intelligence, his modesty, and his ease with both German and English.

During the first of my visits to China, in 1985, I was introduced to Tscha Hung by Fan Dainian; we had in fact exchanged letters before then, mainly about Vienna Circle studies. We talked at some length about developments in the philosophy of science since the Second World War, and to my delight his interests were very far-reaching. We met again in China in 1988, and also during the Schlick–Neurath centenary symposium in Vienna. Our talks were not systematic and the topics tumbled over each other. He knew of my attempt to bring Neurath into greater appreciations, both as critical philosopher and as practical social thinker. This led us not only to Neurath's confrontation with Marxist theory and Communist practice but to Tscha Hung's too. Then we discussed Neurath's optimistic feeling, in his last years, about the future influence of a rational and humane social liberalism in the British mode.

Quickly we turned to issues of science, and the roles of scientists in society. There was no doubt of Tscha Hung's concern about misuse of science and technology, but equally no doubt for him that scientific reasoning is the guide for human life. This was, he agreed, the realistic policy of political and economic forces in the modernization of feudal China, first in the Three People's Principles of the democratic revolution led by Sun Yat-sen before the First World War, and then in the developing Marxist socialisms after that war. Democracy and science were joined in social/perspective, often as a slogan along with other slogans for popular support.

To Tscha Hung, there was an evident task for the philosopher at this

point, which was to offer clarity about science, and about what is not scientific, and to investigate central concepts of the sciences. For himself this task took two forms: his research, as in his dissertation on the concept of cause in contemporary physics, and in his careful attention to probability; and his teaching, together with his writing of textbooks and editing of translations from Western philosophers. He seemed pleased to be compared in his Chinese university environment with A.J. Ayer in Ayer's own 'Return from Vienna' to write *Language, Truth and Logic*.

Certainly his situation had been difficult, and his Stoic equanimity striking when I saw him. We talked sometimes about Needham's researches in the history of the sciences in ancient and classical China, for which Tscha Hung had great respect, and this led to his questions about Vienna Circle investigations of the social conditions of knowledge in general, and natural sciences and mathematics in particular. He had known Edgar Zilsel in Vienna days, and he was much intrigued by my attempt to sketch Zilsel's works of the 1940s on the historical sociology of science in the period of the scientific revolution and its precursors. All the more, he was eager to read Needham's use of Zilsel's historical theories for the Chinese cases.

Tscha Hung was much taken with all the work on external conditions of science, on what Carnap had called the pragmatics, on the several accounts of the 'historical turn' by Kuhn and others, by the analytic/synthetic debate around Quine, and by both the older and newer apparent relativisms typified by the image of 'Neurath's boat'. After his own adherence to Schlick's teaching in early studies, Hung continued to worry over the coherence/correspondence/formal conceptions of truth, and of knowledge generally. The issue of realism vs. anti-realism, in our international conference, was I suppose the vital issue for him. To his pleasure, this continued to be vital for others as well. With this went his happy recognition that a new generation of philosophers of science were investigating and interpreting the history of the Vienna Circle. He was pleased to accept membership on the Editorial Committee of the Vienna Circle Collection.

What then, I asked, was his own relation to Chinese thought, and to Chinese colleagues, whether scientists or philosophers? He had been a young student of Liang Qi-chao but left China at age 18 for university studies in Germany. His own philosophical formation was deeply within the anti-metaphysical logical empiricism. So, in China, he would be

apt to try 'rational reconstruction' of traditional, or 'received', Chinese science and philosophy, to establish criteria for meaning, to identify what is testable, verifiable, probable, certain. But, like Schlick, he saw a role for the metaphysical, the non-scientific, in a different linguistic type. He liked my vague suggestion that perhaps metaphysical phrases and stories, although not strictly cognitive, may convey 'how the world feels'. He had spoken of metaphysics, at its best, as a 'conceptual poem'.

How, I wondered, did he see the other philosopher of his own time in China, one who also had completed a western doctorate in philosophy (Columbia University) well before the Second World War, and one whom I had an opportunity to meet in China. This was, of course, the innovative neo-Confucian Fung Yu-lan, also a survivor through the stages of 20th century China, also at Beijing University. In the early years, just before and after the founding of the People's Republic, they had debated, and engaged in written controversy. Fung brought his own new rational, even formal, reconstruction of the immense cumulative traditional thought, and cultural weight, of China. There was, for Tscha Hung, little understanding of the world-significant achievement of modern science in the ethical focus of Fung's work, and yet he urged me to respect Fung's historical and critical expositions of Chinese classical philosophers.

Moreover, when we talked about the dreams of Marxist humanists for a society within which people might be happy, and about Neurath's praise for Epicurus, Tscha Hung admitted, and lamented, the relative weakness of the Vienna Circle, indeed of the logical empiricists at large, in dealing with problems of ethics, of practical life. When I remonstrated, speaking of 'practical' writings of his beloved Schlick, of his admired Reichenbach, of his friend Feigl, of his hero Russell, he countered with the great example of Kant including moral issues within theoretical philosophy. Even Fung's neo-Confucian doctrine seemed to Hung in danger of losing the intuitive feeling of practical life within a new formalism. I wondered where Tscha Hung might have proceeded in emulating Kant's problematic, but he shook his head, saying he had lost those three decades in isolation, and it was too late now. He surely was no longer isolated in his last years, neither from Western friends nor from Chinese colleagues. He was, throughout his time, a teacher of integrity and a witness to a stage of the history of philosophy.

HONG QIAN AND THE VIENNA CIRCLE

Hong Qian (Tscha Hung, 1909–1992), a member of the Program Committee of this Conference, should have been here with us if the angel of death had not taken life away from him three and half months ago.

Hong Qian was born on October 12, 1909 in Fujian province but his native town was She county, Anhui province. During his youth, he was a student of the great Chinese scholar Liang Qi-chao. In 1927, encouraged by Liang, Hong went to Jena, Germany in order to study spiritual philosophy under the supervision of Rudolf Eucken. Since Eucken died before Hong's arrival, he began to study physics, mathematics and philosophy at the University of Jena. Deeply attracted by Hans Reichenbach's *Von Kopernikus bis Einstein* (1927) and *Relativitätstheorie und Erkenntnis apriori* (1920), Hong moved to Berlin to listen to Reichenbach's lectures. Knowing that Hong was interested in philosophy, Reichenbach suggested his going to Vienna to be the student of Moritz Schlick.

Hong Qian studied at the University of Vienna after 1928. At Schlick's suggestion, Hong attended Rudolf Carnap's course in mathematical logic, Hans Hahn's course in mathematics, Felix Ehrenhaft's course in physics, and Schlick's, Friedrich Waismann's and Victor Kraft's courses in philosophy. From 1930, at the invitation of Schlick, Hong Qian attended the meetings of the Schlick group held every Thursday evening, and became the unique member of the Vienna Circle from the Far East. He was acquainted with Otto Neurath, Philipp Frank, Herbert Feigl, Kurt Gödel, Theodor Radakovic, Edgar Zilsel, Alfred Tarski, Walter Hollitscher, etc. there. Under Schlick's supervision, Hong Qian worked on his doctorate. He was awarded his doctorate in 1934 for a thesis entitled '*Die Frage der Kausalität in der neuen Physik*'. After that, Hong stayed at the University of Vienna to continue philosophical research. On June 22nd, 1936, Hong's beloved teacher Schlick was assassinated. Thereafter, Hong went back to China early in 1937.

Hong Qian became lecturer of philosophy at Qinghua University when he went back to Peiping in 1937. After the outbreak of the Sino-Japanese War, Hong fled to the Southwest of China, and after passing through

many different places became the professor of philosophy at National South-west Associated University at Kunming from 1940 to 1945. In this period, he lectured on the philosophy of the Vienna Circle, and Schlick's in particular. He published many papers on this topic in Chinese philosophical journals and compiled these papers into a small book entitled *The Philosophy of Vienna Circle* which was published in 1945. In these writings, Hong systematically introduced the philosophy and scientific world-view of the Vienna Circle, criticized the traditional metaphysics, Kant's Apriorism, Husserl's and Scheler's phenomenism, Windelband's and Rickert's view of 'spiritual' science, Mach's positivism and Feng Youlan's new Confucianism, and made a significant contribution to the dissemination of logical empiricism and analytical philosophy in China.

As to Mach's positivism, Hong Qian pointed out: Although logical empiricism inherited Mach's positivist spirit against metaphysics, there is a fundamental difference between them. According to Mach's positivism, the reality of material bodies is a complex of sensations, but logical empiricists think, "since there are possibilities that all scientific abstract formalism can be tested by the given, their reality is not less than that of tables and chairs which can be felt. Therefore, the members of Vienna Circle said: 'the atom is not a logical construct', not a way of 'thinking', but it is absolutely real."¹

Hong also pointed out:

The opposition to metaphysics by the logical empiricism is slightly different from that of traditional positivism. Logical empiricists negate the role of metaphysics in the theory of knowledge, but do not deny its significance in practical life.

Hong agreed with Schlick:

that metaphysical *philosophemes* are conceptual poems: in the totality of culture they play, in fact, a role similar to that of poetry; they serve to enrich life, not knowledge.²

Metaphysics is meaningful to ethics and the philosophy of life, so it should not be eliminated.

Hong's book *The Philosophy of Vienna Circle* is similar to Ayer's *Language, Truth and Logic* in some aspects. Both were intended to introduce the philosophy of the Vienna Circle to readers of their native lands. But China lacked the tradition of empirical and analytical philosophy, while in contrast Britain was strong in these. Compared to Ayer who paid more attention to explicate his own viewpoint, Hong's book was more faithful and comprehensive. Ayer's book was republished and reprinted

again and again, and translated into many different languages (including Chinese in 1980) and thereby became a very popular, basic philosophical reading in the world. Hong's book, after the 1st edition of 1945, owing to political and ideological reasons, could not be republished in mainland China until 1989, and then it was again welcomed as a valuable academic treatise. Due to the differences of cultural traditions and political circumstances, how different was what happened to these two books.

Hong went to Oxford in 1945 where he was elected a research fellow at New College. But events in China impelled him to return home in 1947, and while he was Professor and Director at the Department of Philosophy, Wuhan University, he published 'Moritz Schlick and Modern Empiricism' in *Philosophy and Phenomenological Research*, vol. 9, no. 4 (1949). In this paper, Hong introduced the debate between Schlick on one side and Neurath with Carnap on the other side on the problem of the foundation of knowledge, and criticized Carnap's viewpoint of reductionism and protocol sentences. It was two years before the publication of Quine's paper 'The Two Dogmas of Empiricism'.

After the People's Republic of China came into existence, Hong Qian moved to Beijing in 1950 and became the Professor and Head of the Philosophy Department, Yenching University in 1951 [Beijing University]. From 1952 to 1965, he was the Professor and head of the Seminar for History of Foreign Philosophy of the Philosophy Department, Beijing University and then was the director of the Institute of Foreign Philosophy of Beijing University until his retirement in 1987.

Since logical empiricism was condemned as a reactionary idealist philosophy serving imperialism, Hong could not continue his teaching and writing on logical empiricism. In the first half of 1957, encouraged by the Double Hundred Policy, Hong wrote two papers to introduce Mach's philosophical thought and Kant's *Allgemeine Naturgeschichte und Theorie des Himmels*. He suggested to leaders of the Chinese Communist Party to implement the Double Hundred Policy fully, "needn't overemphasize the leadership of Marxism, needn't be afraid of idealism", "pay more attention to the study of Western philosophy". In the summer of 1957, the Anti-Rightist Struggle broke out, Hong was criticized together with other famous philosophers such as Jin Yuelin, Feng Youlan and He Lin. The atmosphere of free contending soon completely vanished. The only thing Hong Qian could do was to keep his silence and do some translation and editing work.

Then Hong was made editor-in-chief of a series of western philosophy from the ancient Greeks to contemporary western philosophy (in 5 vols.) which became the basic materials for students of Philosophy Departments in mainland China.

But, Hong Qian insisted on reading the western philosophical journals and literatures, kept communications with members of Vienna Circle such as Carnap, Feigl etc. until the Cultural Revolution (1966), and followed the recent advances of logical empiricism and analytical philosophy in the Western world.

During the Cultural Revolution, like many other philosophers and scientists, Hong was criticized as a 'reactionary bourgeois academic authority'. His house was searched, rare copies of his early writings, letters from members of Vienna Circle, and some books were confiscated and destroyed.

Perhaps due to the fact that some famous foreign philosophers wrote to the leaders of the Chinese government and expressed their concern about the safety of Hong Qian, the revolutionary committee of Peking University did not force him to join the May 7th Cadre School to do physical labor, but asked him to attend political study routinely. In 1973, in order to coordinate the study of Lenin's *Materialism and Empirio-Criticism*, Hong Qian and two other professors were ordered by the Philosophy Department to translate the related paragraphs of Mach's *Die Analyse der Empfindungen* into Chinese. In 1975, the abridged translations of Mach's book accompanied by an official preface were published by the Commercial Press. (In 1986, Hong Qian and his co-translators translated Mach's whole book and published it without the official preface.)

When looking back upon the three decades since 1949, Hong Qian often said to us regretfully, "lacking the indispensable research materials, without the academic circumstances for free discussion, and with no international academic communication, I did little research work in these three decades. Much time vainly slipped by."

After the end of the 1970's, with the opening to the West, Hong Qian was again allowed to visit the outside world. Though by now in his seventies and relatively frail, Hong Qian became, once more, an indefatigable traveller, charming his hosts with his philosophical acumen and acerbic wit. Through the 1980's, he received visiting fellowships at Queens College, Oxford (1980, 1984) and Trinity College, Cambridge (1982), contributed to symposia on Wittgenstein (1980) and Schlick-

Neurath (1982) in Australia, and lectured in Tokyo (1986) and Hong Kong (1988). In 1984, Vienna University awarded him a second, honorary doctorate on the 50th anniversary of his first one. He also became research professor and member of the academic committee of the Philosophy Institute, Chinese Academy of Social Sciences since 1978, honorary President of the Chinese Society of Contemporary Foreign Philosophy since 1980. His great prestige was a crucial factor in establishing the Sino-British Summer School of Philosophy in Beijing in 1988 with Hong and Sir Alfred Ayer as honorary presidents. Sir Peter Strawson became an Honorary President after Ayer's death in 1989.

In his last decade, Hong's academic contributions reached a second peak. He edited and published collected papers on logical empiricism (vol. 1 in 1982, vol. 2 in 1984), enlarged and reedited the *Anthology of Contemporary Western Philosophy*. He wrote and published 17 papers such as: 'Wittgenstein and Schlick' (*Proceedings of 5th International Wittgenstein Symposium*, 1981), 'Moritz Schlick und der Logische Empirismus' (*Grazer Philosophische Studien* 16/17, 1982), 'Remarks on Affirmations' (*Synthese* 64, 1985), "On Logical Empiricism" (*Zhexue Yicong*, 1987), 'Some Problems about Logical Empiricism' (*Journal of Dialectics of Nature*, 1989), 'Ayer and the Vienna Circle' (*The Philosophy of A. J. Ayer*, 1992), 'Rudolf Carnap' (*21st Century*, 4, 1992), etc. In these papers, Hong Qian discussed the historical sources of the Vienna Circle, the conditions of its rising in Austria during the 1930's and its dissemination in English speaking countries; commented on the philosophical viewpoints of Schlick, Ayer, Carnap, Feigl, Kraft and others; reviewed the changes and developments of logical empiricism in recent decades, and its present situation and new trends; expressed his skepticism about foundationalism. His works are valuable resources for the study of the philosophy and history of the Vienna Circle and highly valued by the academic world.

In respect to the criticism of logical empiricism in the recent half-century, Hong Qian paid much more attention to Quine's criticism than to that of Popper, Kuhn and Feyerabend. Especially, Hong disagreed with what Popper had said, that he had killed logical empiricism. Instead, Hong believed that logical empiricism is still alive and that there was a trend to its rejuvenation in recent decades. Nevertheless, Hong acknowledged the weakness of logical empiricism. In his article entitled 'Philosophical information from travel in Europe' (in 1980), he wrote:

No need for reticence, since the beginning of the Vienna Circle, most schools of contemporary analytical philosophy have not paid sufficient attention to ethics, have not placed ethics in the proper position in philosophy. Just as someone pointed out: a complete philosophical system, needs not only an integral part of theoretical philosophy, but also an integral part of practical philosophy. For instance, in Kant's philosophy, there are three great treatises of *Critique*; in Marxist philosophy, there are dialectical materialism and historical materialism. In view of this, it is no wonder that Russell said emotionally: Strictly speaking, in this kind of philosophy like logical positivism, actually there is no philosophy, but only methodology.³

Hong hoped that analytical philosophers including logical empiricists will pay more attention to practical philosophy and ethics.

Hong Qian was really very sad after the Beijing event in June 1989. He deeply worried that it would block China's international communications in philosophy which had just opened. It was Hong's principal advice that helped the Sino-British Summer School of Philosophy to be revived last summer. This Beijing International Conference on Philosophy of Science was also prepared under his energetic support. So Hong Qian's death is really an irremediable loss to Chinese philosophical circles and the philosophy of science in particular. We will cherish the memory of him forever.

*Zhongguancun,
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China.*

NOTES

¹ Hong Qian (1989). *The Philosophy of Vienna Circle*, Commercial Press, Beijing, p. 62.

² Moritz Schlick (1979). *Philosophical Papers*, vol. 2, D. Reidel, Dordrecht, p. 111.

³ Hong Qian (1990). *Collected Papers on Logical Empiricism*, Shanlian Shudian, Hong Kong, pp. 247-248.