

The Big-Bag Tradition of Science Studies in Mainland China

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Received: 6 April 2010 / Accepted: 5 October 2010
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1 Progress?

In his general assessment of Chinese research in philosophy of science and STS studies, Professor Li Xia characterizes recent developments as “substantial progress.” I cannot bring myself to agree. Since I suspect that we share a similar perspective on the current scene, I am puzzled by the optimistic generalization Li has offered. After all, Li is the author of many blistering criticisms of current state policy; in bold newspaper articles he has not hesitated to confront scholars he sees as shameless (Li 2009, 2010a, 2010b). Could this apparent change of heart mean that Li wants to avoid offending certain people and institutions in mainland China?

In philosophy of science and STS studies, public resources are rarely distributed equitably, and one often hears stories about “the bad driving out the good.” It seems as though administrators prefer to look the other way, while rank-and-file academics suffer in silence. The concept of the “academic demon” (*xue yao* 學妖) and the “fourth-concubine effect” (*si yitai xiaoying* 四姨太效應), coined by me and my colleague Tian Song (Liu and Song 2005), who first presented it as an academic crosstalk (*xueshu xiangsheng* 學術相聲) at a philosophy of science conference held in Changsha, vividly depicts the hidden rules that govern these disciplines.¹ If we compare the studies of twenty years ago to the present, can we really speak of “substantial progress”? Of course, there were only twenty-eight master’s degree programs, four doctoral degree programs, and eight supervisors of doctoral candidates in the entire country in 1981, and now there are perhaps one hundred master’s programs, a dozen doctoral programs, and hundreds of professors.

Perhaps Li restrained himself in his recent paper, hoping to display the more promising aspects of mainland China’s academic circles. After all, what does *substantial progress* mean? Chinese people like to use the term *progress*. Ever

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¹ The academic demon resembles Laplace’s or Maxwell’s demon. The fourth-concubine effect draws its name from a character in *Raise the Red Lantern* (1991), a motion picture directed by Zhang Yimou and based on a novel by Su Tong.

since Charles Darwin's theory of natural selection arrived in China, evolution has been understood as progress. The whole enterprise of science and technology is assumed to advance perpetually toward perfection.

When he turns to the scope of what could be called the industry of philosophy of science and STS studies, his assessment becomes more convincing. Even though a large proportion of the papers are rubbish, and every field has far to go before it is fully mature, the sheer scale of the work being undertaken is impressive. Is this not a prosperous and vast panorama? If the word *progress* is intended to describe this scene, I subscribe to it completely.

It is estimated that in China the number of full professors, associate professors, research fellows, and associate research fellows working in the fields of dialectics of nature and science studies has exceeded one thousand, and a few of them have published studies in English.

2 The Big Bag

Science and technology entered mainstream discourse during the modernization of Chinese society, so it is not surprising that a broad array of STS research projects has been carried out since the reforms and opening of the late 1970s, though many of these have not been up to international standards.

Li Xia's paper is informative and comprehensive, but I feel that a far longer work would be required to grasp the whole enterprise of STS studies in mainland China, which is notable for a long history and rich local features. Research in these areas that is carried out in different countries is somehow incommensurable because of distinct social environments, sociohistorical contexts, and regional problems—for example, the economic and ecological changes, and the policies related to them, in northeast China. Still, it seems as though the set of theoretical tools developed by Western scholars, from logical positivism to Karl Popper's falsification theory, Mertonian sociology of science, and more recent additions such as the sociology of scientific knowledge, the social studies of technology, feminist and postcolonialist studies of science, have proved to be useful in the Chinese context and will be useful for a long time.

Chinese approaches to philosophy of science and STS studies have been complicated by political, cultural, historical, and personal factors. Yu Guangyuan, a leading figure for the first generation of scholars after the birth of the new China, declared that studies of science and technology as a whole had formed a distinctively Chinese school—Marxist but distinctive. He referred to this school as “Big-Bag style” (*da koudaishi de* 大口袋式的), and he included among the contributing disciplines natural philosophy, philosophical problems in the natural sciences, philosophy of science, history of science, science and technology policy studies, philosophy of technology, sociology of science, and even a discipline devoted to studying the social benefits of science and technology. I do not know whether the label is appropriate and accepted or not, but at least it is really distinctively Chinese.

Big-Bag studies can be found in the two important Chinese journals: *Studies in Dialectics of Nature* (*Ziran bianzheng fa yanjiu* 自然辯證法研究) and the *Journal of Dialectics of Nature* (*Ziran bianzheng fa tongxun* 自然辯證法通訊). A weekly called

the *Gazette of Dialectics of Nature* (*Ziran bianzhengfa bao* 自然辯證法報) was published during the 1980s by the Chinese Society for Dialectics of Nature (Zhongguo ziran bianzhengfa yanjiuhui 中国自然辩证法研究会), a large group that enjoyed high political status. Among the popular book series that this trend inspired was Our Science Culture (Women de kexue wenhua 我们的科学文化), coedited by Jiang Xiaoyuan and Liu Bing.

To keep things fresh, the old Big-Bag mainstream was often infused with new intellectual currents from the West, including the sociology of scientific knowledge, various postmodernist impulses, science communication studies, and phenomenological research into science and technology. In 2001 Peking University's philosophy department offered perhaps the first formal course of its kind in the country: *Introduction to the Sociology of Scientific Knowledge*. The interests and intentions behind these events did not look much like the old paradigm Yu Guanyuan had offered. Recognizing this, Wu Guosheng proposed a label, "the second wave of philosophy of science" (*di er zhong kexue zhexue* 第二種科學哲學) to distinguish a more self-aware, more reflexive approach.

STS studies are fraught with political opportunities and risks thanks to the intimate relationship between ideology, technological and scientific advances, and the well-being of the people in a rapidly changing country. I must insert a comment here: many scholars who worked in dialectics of nature or STS studies helped prepare public opinion for the national reforms and opening initiated by Premier Deng Xiaoping. For example, they applied Ilya Prigogine's theory of self-organizing systems, Hermann Haken's synergetics, and other theories to political reform. Not all suggestions were welcome, as some thinkers were considered exponents of bourgeois liberalization. Naturally some scholars became dissidents—one thinks of Fang Lizi and Jin Guantao. A bold idea in this domain risks running into ideological trouble.

3 A Long-Term Project: Opposing Dogmatic Scientism

STS scholars who have recently dared to confront the scientism that runs so deep in China are rebuked for rejecting science, rationality, and even civilization. Among their critics are scholars who suffered in the previous ideological struggle (e.g., those in 1956, 1966, and 1989), now fiercely devoted to the defense of what they see at the scientific spirit and rationality. The sociology of scientific knowledge was born in 1970s Edinburgh, but few Chinese students had heard of this school before 2000 because it failed to win over our teachers and opposed the prevailing ideology. Instead of engagement or critique, there was indifference.

Many scholars still consider the main task of modern STS studies the advancement of technological innovation and the development of productive forces. Why? Because science was considered the fullest display of human rationality. This childish viewpoint is reflected in the aphorism "The good is attributed to science" (*hao de gui kexue* 好的歸科學). Tian Song coined this phrase as a reflection on a famous passage from *Hamlet* (Act 5, scene 2):

If Hamlet from himself be ta'en away,
And when he's not himself does wrong Laertes,

Then Hamlet does it not, Hamlet denies it.
 Who does it, then? His madness: if't be so,
 Hamlet is of the faction that is wrong'd;
 His madness is poor Hamlet's enemy.

Michael Mulkey (1991) mentioned a similar analogy to science, a moving story of love and bondage: “She was distressed and shocked by his reply which was, in effect, that that was none of his business,” where *he* stands for natural science and *she* for second-order studies of natural sciences, such as the sociology of scientific knowledge.

What is the meaning of *scientific* in the phrase of *a scientific outlook on development*, frequently encountered nowadays in Chinese newspapers and on television? I guess some people use the term *scientific* to mean *absolutely correct*. Science possesses extraordinary power because it constructs the most important standards by which judgments are rendered. And whether or not something is science or pseudoscience doesn't matter much, because most people are incapable of distinguishing between the two. The key is the word *science*, which functions as a symbol. Who controls the naming of science controls the power, and vice versa (Liu 2004).

My e-mail address seems strange because of the local part, “antiscience,” but it helps me defend a set of independent reflections on scientism. Of course, I am not against all of science and technology, just the bad elements. Do we not have reasons enough to oppose some scientific practices and some scientists? Many evils in the world are connected to technology and pure science, and lots of scientists and experts with high IQs fail to follow their consciences. One might say that many evils cleared the various protocols imposed by science and technology long ago. Which is more dangerous, authentic science or pseudoscience? Far more powerful because far more effective than pseudoscience, true science acquires an unstoppable force once it enters into a partnership with technology. And it shapes our understanding of ethics (Zhang 2009). Pseudoscience affects scientific creativity and technological innovation, but science affects the sustainable development of the global ecosystem and will affect every one of our descendants. In a free and democratic country the results are seldom fatal, but when the people do not have a voice and power can be exercised with impunity the consequences may be terrible. The combination of science, technology, and totalitarianism is often efficient, but its effects are unpredictable.

The {science-technology, happy life} dyad is just one of many classic “neither nor” pairs, much like {love, marriage}, {argument, philosophy}, {Ph.D., smart}, {scientific laws, determinism}, {selfish gene, altruism}, {substantial equivalence, safety of genetically modified foods}, and {group selection, human capacity for morality} (Nesse 2002). In each case, the first term is neither necessary nor sufficient to ensure the second. One might say that the importance of science and technology is only a kind of possibility. Tom Hodgkinson (2009) said, “We did actually manage quite well for many millennia without computers or mobile phones. Shakespeare had no BlackBerry; Aristotle managed without an iPhone. Christianity spread around the globe without blogs. Christ preached his sermon on the mount without the need of a PA system and PowerPoint presentation. All of our technology is completely unnecessary to a happy life.” Moreover, modern science, technology, and engineering increase the risks faced by our society. Few scholars have understood this plain and simple truth.

In mainland China, one segment of STS studies has played and is playing an important role in the madness of modernization. One or two theories and schools is not enough to cope with the complexities of social practices. To cope, scholars must first enjoy pluralism and frank dialogue with mutual respect. They should study their own problems—China presents many interesting cases, such as the social history of STS studies from 1949 to 2000, the history of alternative science, the construction of the Three Gorges Dam, the debates over reverence for nature, the case of Zhou Zhenglong's photograph of a tiger, social Darwinism and modern China (Yang 2009), and so on.

In "Philosophy of Science and Science Studies in the West: An Unrecognized Convergence," Joseph Rouse adroitly summarizes the recent trends. Many different approaches to the natural sciences emerged within the span of thirty years: once logical empiricism had shown the way, feminist scholars, anthropologists, historians, sociologists, and philosophers boldly took up new methods and rationales, each following a distinctive path to the better understanding of science. In the long run, a great synthesis of these subdisciplines—including history of science, sociology of science, science communication, and philosophy of science—is needed, but for now the task remains unthinkable.

During the past few decades, empirical and phenomenological studies of science have made more substantial progress than has philosophy of science; much useful data has been accumulated, and many valuable philosophical problems have been identified. Only after logical positivism had been subjected to many critiques could we be certain that the concept of purely objective evidence, one of the foundations of scientific explanation, had been invalidated. Now, after significant studies by constructivists and phenomenologists, we finally understand how evidence functions. Evidence is alive and dynamically displays itself with time. The annoying problem of *underdetermination* that long lay at the heart of empirical philosophy of science has simply ceased to be. We know that every piece of evidence is the complex result of an encounter between the subjective knower and an objective aspect of the outside world. The old empiricist concept of evidence cannot objectively narrate itself, so we add an agent or two to help it construct a story. As in the film *Under Suspicion*, every piece of evidence seems to implicate everyone concerned, sometimes accurately and sometimes misleadingly.

Rouse also identifies a crucial element of scientific method: robustness of model. Most Chinese STS scholars are familiar with Friedrich Engels's review of induction and deduction in his unfinished book *Dialectics of Nature* (1883). Considering the instability of nonlinear dynamics, the deductive inference rule *modus ponens* is not enough in itself to guarantee the validity of reasoning sequences in the real world, and similar results cannot necessarily be obtained from similar causes. Some kind of stability hypothesis should be added in order to draw meaningful conclusions. Hence, the uncertainty of deductive inference appears to be like that of inductive inference, and the asymmetry between deduction and induction is so reduced that the basis for the fundamental cleavage between analytic truth and synthetic truth vanishes. Induction is not inferior to deduction from a pragmatic point of view. Analogously, Chinese scholars familiar with the relations between capital and alienation set out in Karl Marx's critique of political economy should be primed to appreciate the insights of the sociology of scientific knowledge. They ought to advance the critical

evaluation of science through rich local case studies, but since most of them dislike Marxist critical social theory because of its association with unfortunate political movements, they utterly miss the dialectical form of the history of STS studies from scientism to antis scientism. Few are prepared to call scientism a bad thing. He Zuoxiu, a member of the Chinese Academy of Sciences active in the Chinese Society for Dialectics of Nature, likes to publicly declare “scientism” (科学主义 or 唯科学主义) a positive word. He has also said that the core theory of Chinese medicine is pseudoscientific and reverence for nature runs contrary to science.

Li Xia’s paper identifies many works by Chinese STS scholars, but I feel that the situation is not as prosperous as Li says. Many of these papers contribute no new information at all. Some scholars try to combine the Marxist tradition of science, technology, and society with the newer science and technology studies. Others stuff their publications with fashionable terms from Western journals while turning their backs on the political tradition of STS studies in China. Students are trained to remain abreast of the newest academic currents instead of focusing on internal dialectics. Nearly all of them share the same uncritical admiration of scientism. The Marxist approach to science has been eclipsed but the scientific ethos persists. Although he has previously criticized these phenomena, Li fails to do so here.

In my opinion, the biggest problem facing Chinese STS studies is a lack of self-hood, of academic self-confidence. Neglecting the rich social and cultural resources to which they are heir, young scholars and old have labored in vain to create a distinctively Chinese discipline.

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