

# China's Academic Profession Hit by "Involution"

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This past year witnessed not only a global health crisis, but also a dramatic hit on China's academic profession. There came a U-turn with respect to academic appraisal exercises in Chinese universities. In the past decade, enormous weight was placed on publications in journals sourced by the Science Citation Index (SCI), a commercial citation index that records citations of articles published in its indexed science, medicine, and technology journals. Those journals are thus considered the leading ones, and publishing in those journals would not only lead to merit pay but also preference in appraisal exercises, leading to professional promotion and talent program opportunities, in turn bringing increased personal income and research resources. A paper published in a top SCI-indexed journal could earn a bonus of up to USD 85,000. Consequently, China's annual outputs of papers published in SCI-indexed journals soared from 120,000 in 2009 to 450,000 in 2019.

## Abstract

China's robust production of research publications has not translated into innovation, and the country is riddled with key technology bottlenecks amid the US-China trade war. A situation of "involution" has been cited as a responsible factor for this paradox. When translated into the academic profession, "involution" refers to a situation whereby most university-based researchers work harder and publish more papers, while the innovative strength of Chinese higher education does not grow significantly.

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Paradoxically, China's robust production of research publications did not translate into innovation. This was exposed by the US–China trade war, which revealed that China has been suffering from a severe deficiency in control over key technologies and intellectual property. Top Chinese universities are now perceived as being substandard in major technology development and transfer. A leading scientist in China, Shi Yigong, revealed a stunning reason behind the scenes: Chinese universities do not produce many original or breakthrough innovations. He further warned that the current campaign for boosting publications would not necessarily lead to a boost in science and engineering (S&E). Rather, it could usher in a seeming prosperity, merely based on size and quantity of research publications. As a result, China's ministry of education and ministry of science and technology released a policy document in February 2020 that officially discourages the previously sanctioned practice of using the SCI as a main criterion for research appraisal. According to the new policy, SCI-related indicators (e.g., numbers of articles published in SCI-indexed journals, impact factors of the journals, and numbers of citations of publications) are not to be accepted as direct evidence of research merit, and the practice of paying researchers bonuses for publishing in SCI journals will be prohibited. In December 2020, the ministry of education and five other central agencies (including the Chinese Communist Party's Central Organization Department and Central Publicity Department) issued new guidelines concerning the professional advancement of higher education teaching staff, which mandates a rectification of the practices of "appraising articles by publishing journals and granting paramountcy to SCI-indexed journals."

Recently, on May 21, 2021, the Chinese Communist Party's top leadership promulgated a guideline aiming to rectify the appraisal mechanism concerning science and technology outcomes. The document points out the problems of simplifying indicators, quantifying criteria, and chasing trends blindly, and the utilitarianism in the current appraisal practices. It calls for a multivariate appraisal system with market-based assessment and mid-to-long-term evaluation as well as post-effect review. This guideline demonstrates the urgency of amending the research appraisal process in China.

### "Involution" Held Responsible

A situation of "involution" has been cited as a responsible factor for this paradox. This concept has originally been used by anthropologists to describe how population growth in some agrarian societies is coupled with a decrease in per capita wealth. It is now becoming popular in China, where most people work harder yet wring little progress in terms of social mobility. When translated into the academic profession, "involution" refers to a paradoxical situation whereby most university-based researchers work harder and publish more papers, while the innovative strength of Chinese higher education does not grow significantly. This paradox is vividly demonstrated by the fact that, on the one hand, a growing number of Chinese universities now make their way into the league tables of global rankings on account of their research publications and citations; yet, on the other hand, the United States could easily take advantage of China's technology bottlenecks and hold China by the throat in the bilateral trade war. More specifically, international research publishing databases record that China has outnumbered the United States in terms of publications in such fields as material science, computer science, engineering, chemistry, mathematics, and physics. Yet, among the 35 key technology constrictions recently cited in China's *Science and Technology Daily*, most relate to those particular fields.

How does involution lead to such an effect? Scarcity of resources is believed to render a society "involved." In the face of a scarcity of resources needed in a given society, specific types of institutions may develop in order to chase and share as far as possible those resources in short supply; the more complex the evolution of those institutions, the more involution a society will become. In the context of Chinese higher education, the state has in the past two decades invested in a few programs of excellence with the aim of creating world-class universities (i.e., Projects 211, 985, and "Double First-Class") or rewarding high caliber talent (such as the Thousand Talents Plan and the Cheung Kong Scholar Award). These programs pull and concentrate an enormous amount of resources. Many provincial governments mimic such practices and launch excellence

programs at the local level. These programs not only concentrate resources, but also embed selection criteria (and weights) in publications in high impact journals (those indexed in the SCI, representing a tiny portion of all science & engineering journals), literally creating a situation of scarcity.

This state of scarcity driven by the regime of “SCItism” propels Chinese universities and researchers into focusing their attention and efforts on resolving the immediate scarcity, that is, on acutely seizing access to those programs of excellence. This situation often leads to magnifying productivity with quick turnaround work. Some even deploy tactical manoeuvres targeting publishing for publishing’s sake in the SCI journals.

Worse still, a scarcity of resources impedes our cognitive function and performance. Scarcity is likely to push us into a situation of tunneling, which is a state of attending entirely to the resource or opportunity in short supply—often at the expense of expanding our bandwidth, which is our cognitive space to think and imagine. A lack of bandwidth inhibits fluid intelligence, which in turn obstructs the ability to envision big questions and achieve long-term goals, and results in middle-range rather than innovative work. As such, the concept of scarcity could well explain how involution occurs within China’s academic profession, and more importantly, may forecast what might happen down the road.

### **Circumstances down the Road**

The aforementioned policy measures demonstrate the effort of China’s government to break the circle of involution in which the country’s knowledge production appears to be trapped, and its commitment to restoring the conduct of innovative and high-impact research. Yet, outcomes might be contingent on, or constrained by, certain internal and external conditions.

Internally, China is a country characterized by massive size—and thus constant resource scarcity. For example, even within the country’s top 100 universities, the income gap can be as wide as thirtyfold. The scarcity regime has been a natural policy choice and has proven to be effective in pursuing China’s social and economic development goals. Arguably, scarcity does provide a focus dividend, a situation whereby one experiences an increase in productivity as a result of focusing sharply on a single pursuit. Such an effect of the focus dividend satisfies China’s need to overtake others in global competitions. If an alternative regime cannot be put in place and function as efficiently, the inertia ushered in by path dependency could switch the pendulum back. Indeed, while the Chinese government has proscribed the use of the SCI-related indicators, it has not yet sanctioned any alternative appraisal mechanism.

Externally, the dominance of academic capitalism carries features of the scarcity regime, which advocates focusing investment on top institutions and researchers—through constant and rigorous selections—in order to maximize research returns. Researchers are thus propelled to publish as much and as quickly as possible in journals with high impact factors, which in turn generate good citation performance; their universities benefit hugely from such citations in the exercise of academic rankings. If Chinese universities’ ranking outcomes are hindered in this new policy environment, the government (and the universities as well) might want to revert to the old rules. ▲

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