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Forum

Understanding the Challenges and Rewards of Social-Ecological Research in China

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Interest in collaborative research on Chinese social and ecological systems has grown dramatically in recent decades. While international researchers are giving increased attention to China, foreign scholars, especially those new to China, are

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often unsure of the best way to find collaborators, garner sponsorship, and pursue research goals. Understanding research incentives for Chinese scientists, the culture of relationships, research topic sensitivity, and data access limitations are some of the challenges commonly experienced by foreign scholars in China. In this article we identify potential hurdles and offer remedies when possible so that foreign scholars can more readily adapt to China's scholarly environment and improve the prospect for mutually beneficial collaboration.

Keywords China, collaboration, cross-cultural, interdisciplinary, international, research, sponsorship

Research on social and ecological systems is rapidly expanding in China. Over the past decade, China's share of the world's primary-authored publications has grown by about 0.5% per year, and citations thereof have increased exponentially (Zhou and Leydesdorff 2006). Following this trend, foreign researchers are seeking opportunities to both collaborate and develop their own research agendas within China's borders, facilitated by growing latitude for scholarly inquiry. But foreign scholars, especially those without research experience in China, often have little understanding of how to pursue research goals within the Chinese system, garner sponsorship, and find collaborators. As anywhere, complementary research interests and mutually beneficial partnerships underlie motivation to collaborate; however, bringing collaboration to fruition can still be challenging. Our audience is scholars interested in or new to conducting research in China, particularly those studying social and ecological change. In this article, we discuss Chinese research culture, outline common research challenges, and provide insight and remedies for foreign researchers. By identifying potential pitfalls, we hope to help researchers better understand China's scholarly environment and equip themselves to engage in successful scientific collaborations.

Navigating the Academic Hierarchy

While mindful that opportunities and constraints for doing research in China vary substantially by region and institution, we aim to highlight key issues that transcend disciplinary and geographic boundaries. We have identified three underlying factors common to many research challenges in China: research incentives for Chinese scientists, hierarchical institutions affecting research directives, and the culture of relationships.

In order to help propel scholarship to the world's top ranks, China has increased its investment in research by over 20% annually (Shi and Rao 2010), reorganized its national research model (Suttmeier et al. 2006), and instituted productivity incentives for scientists, including financial rewards for article publication. These financial incentives, increasing based on authorship ranking and journal impact factor, can be important supplements to comparatively low base salaries. Additionally, the Chinese Academy of Sciences (CAS), the main research organ in China, requires stringent evaluation and review of researchers (Suttmeier et al. 2006). As anywhere, Chinese researchers are fundamentally concerned with high-quality science, but they also face intense claims on their time, are subject to high competitive pressures, and may see different benefits in collaborative projects relative to their foreign counterparts. These factors can also influence which projects Chinese researchers have the ability to undertake and with whom they collaborate.

Academic institutional hierarchy can structure the interactions between foreign researchers, Chinese academics, and officials. Although exceptions exist, senior

professors typically have substantial control over the direction of research operations, while junior professors and lecturers have less influence, lower salaries, and greater involvement in implementing research programs. Similarly, graduate students often work on advisors' projects and lack autonomy in their own research. The novice foreign researcher is therefore advised to initiate collaboration at relatively high levels. Building these relationships, though, can be complicated. Senior professors, typically pursuing high-profile projects, may understandably view an unknown foreign researcher as a risky time investment since it is difficult to know the quality and potential of their research.

Scholars can show their credentials and research potential in meaningful ways through sharing their curriculum vitae, list of publications, or research website, though a more relatable way to signal one's quality as a researcher is with an introduction to a higher level Chinese scholar through a respected mutual contact. This approach accords with common Chinese cultural norms of establishing and maintaining relationships, known as *guanxi*. *Guanxi* refers to more than just a professional network; it is the building of personal relationships involving reciprocity, obligation, respect, and conformity with particular norms of etiquette (Luo 1997). Understanding *guanxi* can be crucial for successful research, especially in rural settings. Knowledge of a foreign researcher's *guanxi*, or the person's web of contacts, can help a would-be collaborator judge the quality of potential work and serves to keep a researcher accountable by ascribing the merits (and faults) of their actions not just to the individual, but to that person's whole network. Thus, an introduction to a potential Chinese collaborator, particularly from a known leader in one's field, can testify to the foreign researcher's credentials and a project's legitimacy. Failing a personal introduction, a face-to-face meeting in a relaxed conference or professional setting is preferable, especially as part of a broader approach of developing working relationships with potential collaborators. In contrast, a "cold call" or unsolicited e-mail from an unknown researcher may elicit a lukewarm response, if any at all.

Working in a Decentralized Administrative Context

China's decentralized institutional environment also poses unique challenges and opportunities. Beginning in the late 1970s, political decentralization granted local governments greater power, discretion, and responsibility (Montinola et al. 1996). These same processes can also breed local protectionism and exacerbate tensions between central and local governments (Yang 2004). Access granted by central government agencies may carry little weight at the local level, which can confuse foreign researchers. For example, affiliation with a national CAS institute does not grant research access throughout the country. Most projects will require additional review and approval at provincial and sometimes local levels.

In contrast to many other research settings, non-biomedical research that involves human subjects is not typically required to undergo any ethical review in China to ensure that the rights of human subjects are protected, though the project would require the government approvals discussed above. A foreign researcher would, in most cases, still need ethical approval from that researcher's home research institution, keeping in mind that ethical review boards outside of China may be less able to address the ethics of research in unfamiliar contexts. The researcher may therefore wish to consult Chinese researchers who serve on biomedical ethical review boards, as well as trusted colleagues who have worked in China and can advise

on composing protocols that are culturally appropriate and provide adequate protection of human subjects while also maximizing research benefits.

Approval for research may also be impacted if sensitive topics or data defined as state secrets are involved. While some issues like Tibetan autonomy are commonly known to be sensitive, other topics often require special permission for foreigners, including water quality testing, soil sampling, collecting geospatial information, and measuring impacts of infrastructure and environmental rehabilitation projects (e.g., roads, dams, reforestation programs, or water diversion schemes). The political sensitivity of research is not uniform across the country but can be highly subject to the concerns of local governments. For instance, where local enterprises damage water resources, officials will likely disapprove of related scientific research. A wide range of consequences can befall foreign researchers who pursue sensitive topics. Most commonly, requests for data or site access are denied or Chinese collaborators are not forthcoming. Harsher consequences, such as deportation, may have lasting impact on a researcher's future in China and could harm the reputations of Chinese collaborators.

While some research topics may be deemed politically sensitive at various times and places, it may still be possible to pursue them. We advise that researchers not work against the system, but attempt to work through it. Because some natural scientists assume their work is not intrinsically political, they commonly present detailed research plans and apply for any and all research permits that might be related to their work. Although this approach would seem to grant project security, successful researchers often rather focus on aspects of the project that are critical for success and may frame projects within an existing Chinese academic research or political agenda. Further, knowledge of local contexts and interests enables researchers to frame questions and methodology in locally sensitive ways. Collaborating with a Chinese researcher who better understands local rules and limitations may help foreign researchers assess the feasibility of investigating potentially sensitive topics.

For approved projects, a state-issued permit may be required for primary data collection in certain locations, such as nature reserves, or to collect certain types of data, such as plant or animal DNA. State ministries provide permits appropriate to the ministries' respective roles, and different ministries have distinct application procedures with varying degrees of clarity. Moreover, administrative overlap and political decentralization complicates work for researchers working in several administrative regions where standards and requirements vary. Multiple permits may be needed for a project, but determining which permits are required may elicit as many answers as the number of people asked. Even when permits are granted, they do not guarantee full access to a potential research site, since the site may be managed by a government agency different from those that issued the permits.

Even approved research can face limits to data access. Non-nationals have fewer rights than nationals to access and use certain datasets in China. Spatial data have particular constraints, as they cannot be recorded with a global positioning system (GPS) receiver by a foreigner without approval from the Chinese State Bureau of Surveying and Mapping. There have been several cases of foreign researchers being arrested, fined, and deported for collecting GPS data without permission (Cyranoski 2008). Foreigners also cannot legally possess aerial photographs, satellite imagery, or high-accuracy maps without proper approval, regardless of when or where the products were made.

Sponsorship and Collaboration: Essential Resources

Many of the challenges outlined in the preceding can be overcome or avoided when a foreign researcher secures formal sponsorship by a Chinese researcher or institution. In such a relationship, the researcher affiliates him- or herself with a particular institution, and the institution (implicitly or explicitly) agrees to take on certain responsibilities on the researcher's behalf. Sponsorship can be considered a requirement for conducting research in China, since many funders and institutional review boards expect applicants to demonstrate institutional affiliation. The courtship of sponsors must be done with recognition of the relationship and hierarchical structures discussed earlier. For graduate students, establishing sponsorship best begins with a formal introduction by an advisor or other respected professor, preferably in person, and ideally by someone with *guanxi* with the would-be sponsor. Sponsorship is manifested in a letter of invitation from the sponsor, which is needed to obtain a visa appropriate for research and serves as an official statement of a researcher's activities.

The benefits of sponsorship to the researcher can be numerous. Sponsors can serve as mentors; provide feedback on proposals; help obtain research permits; facilitate meetings with officials; act on the foreign researcher's behalf as a communication point for partner institutions, government agencies, and study participants; aid with fieldwork logistics and planning; and provide access to laboratory equipment, supplemental funding, and data owned by the sponsor or sponsoring institution. Crucially, sponsorship signals to other researchers and officials that the researcher is supported and legitimized by a responsible Chinese institution.

While the benefits of sponsorship for foreign researchers appear straightforward, the benefits for sponsors may only emerge from a long-term relationship. Benefits to sponsors may include joint publication and English language editing of manuscripts, guest lectures or seminars for the sponsor's students, faculty or graduate student exchange with the foreign researcher's home institution, access to the foreign researcher's academic network, and possibly compensation for the work invested in realizing the sponsorship. Since a sponsor also becomes somewhat accountable for the researcher's actions, researchers should make concerted efforts neither to violate agreements with sponsors nor to do anything that may compromise a sponsor's reputation.

Most importantly, sponsorship can be a gateway to research collaboration or follow from establishing a collaborative relationship. Successful collaborations are generally forged by a foreign researcher who is regularly involved in a research laboratory, forward-thinking Chinese academics who see the researcher as a future colleague, or a particularly driven young academic who sees potential to expand his or her research portfolio and increase productivity. In addition to complementary research interests, the scientific merit of collaborative research, and the potential of shared authorship on collaborative research articles, other incentives to collaborate from a Chinese academic's perspective may vary widely, depending on the foreign researcher's status or seniority. If a foreign researcher is able to provide supplementary research funding or opportunities for Chinese researchers to spend time in the foreign researcher's institution, chances for a positive collaboration likely increase. We have found that the draw of in-kind compensation, such as document translation and editing, is generally weak. Identifying incentives for joint engagement in one's research program is critical for a strong collaboration. While this

may seem like common sense, we have often observed young foreign researchers making the mistake of entering a Chinese laboratory and expecting resources, laboratory space, and mentoring but lacking clear objectives for collaboration or even a prior commitment of interest from a researcher in that laboratory.

Certainly the draw of conducting research in China is matched by its importance, but one must remain mindful of the complexities involved. Of course, flexibility, patience, and persistence are key characteristics of any successful research project. We further urge foreign researchers to develop as strong an understanding of Chinese languages, cultures, history, and geography as possible to benefit their personal and professional experience in China. Having a trusted confidant to illuminate complicated situations can also guide foreign researchers through uncertain interactions.

Our observations are neither comprehensive nor always specific to China alone, since similar circumstances exist in other countries. However, we hope that by highlighting lessons we believe have broad relevance within China, this article will provide the China novice with insights helpful in fostering mutually beneficial, lasting collaborations.

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