



Transcultural Issues in Science

In this paper, I discuss internationalizing science by sharing from personal experience and introducing the uniqueness of doing science in the developing world. I give examples of how historical, political, and cultural values influence the way science is done in China. I explain some aspects of global research, including the challenge of doing theoretical research in conditions of limited funding. I show why it is important that research be closely tied to application with reference to our work in China. Finally, I introduce ways my faith influences my approach to science.

Shanxi Evergreen Service is an American Non-Governmental Organization (NGO) registered and located in China. Its purpose is to collaborate with organizations and departments in Shanxi Province to establish programs that will meet the needs of the common people. Evergreen has a distinct Christian history in China dating back to the 1920s, and continues to carry on this spirit today.

After working as a high school teacher and laboratory biochemist, I went to China in 1991 with my wife Rene to study Chinese. In 1994, I assumed the role of Medical Programs Officer for Evergreen, which I continued to do until 2000. In that capacity, I worked with a team of Christian MDs from North America to determine the health needs of the local people, to understand the goals of the local health system, and to determine ways we could collaborate to meaningfully meet the needs of the local people. Although I was not trained in health administration, a background in the biological sciences helped me to grasp the goals of our medical doctors, and I had learned from studies in community development how to work with local people to solve problems and meet needs.

Science in China

The way science is done in a country is influenced by historical, political, and cultural factors unique to that country. As much as we might like to think globalization is making for a uniform global culture, cultural differences continue to run very deep.

China has a long history of a strong central government that significantly controls people's lives. Historically, obedience to authorities has been the main value. Even

an educator as celebrated as Confucius was known to say: "The common people should be made to follow orders, not to understand them" (Analects 8.9). China does lay claim to some scientific greatness, but it is largely limited to a few inventions, namely, gunpowder, the compass, paper-making, printing, acupuncture, the seismograph, and the production of silk fabric.

The political situation of the last fifty-three years has been in keeping with China's historical method of governance. From the founding of China in 1949, communist ideology came to pervade all of life for Chinese people, including their science. In the 1960s and 70s, medical research was required to be done from a communist viewpoint. Communism was portrayed as a scientific and intellectual system. Eventually the very word *science*, with all the authority it had assumed in the modern world, was taken over and used as a political tool.

The word *science* was even used to legitimize policy. Genetic cleansing (sterilization of criminals, the handicapped, the mentally ill) was carried out in the 1990s in China by arguing that it was a scientific way to improve the quality of the population (even though it was based on faulty scientific



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Early Career Scientists' Corner

Transcultural Issues in Science

Chinese education has reinforced the standard science-religion warfare rhetoric in order to prop up materialism, which was being offered to them from the works of Marx and Dewey.

reasoning). Factories boasted of using “scientific management.” Many health products were labeled “scientific.” Cafeterias were to be managed “scientifically” and beauty salons boasted of being “scientific.” These problems have been so pervasive that people have grown suspicious of anything labeled “science,” and even science itself. They fear it is not science, but propaganda, whether political or in the marketing of products.

Science understood as a process of systematic discovery of the way the world functions has been overwhelmed by these competing uses of the word. Wanting to understand better what Chinese people mean by *science* I began asking people, “What is the opposite of *science*?” The consistent answer I received from my Chinese friends was *superstition*. This made sense of the common response of Chinese people to the question, “What do you believe?” and the answer, “science.” Religion is seen as superstition and science is considered to be according to reason. Therefore, religion and science are in opposition.¹

Chinese education has reinforced the standard science-religion warfare rhetoric in order to prop up materialism, which was being offered to them from the works of Marx and Dewey. In a January 1995 article in a Chinese medical journal, the opening line read: “In the middle ages, the oppressive and sexist theological ideas of the Christians held science cruelly hostage.” The article then described how Harvey helped to destroy religious ideas by his medical discoveries. This kind of propaganda makes it difficult for people to publicly identify themselves as Christians. It also makes science appear as a universal acid out to dominate all ways of thinking, not as a discipline or activity carried out by scientists. It is seen not as a process, but a power.

In addition to historical and political factors, cultural factors also influence the way science is understood and carried out. Two aspects of Chinese culture make doing good science in China unique—face or respect (*mian zi*) and connections (*guanxi*). This causes respect for people and relationships to have priority over respect for data or respect for the truth. The good side of this attribute is that within one’s own network,

relationships are intimate and supportive. For many Westerners, relationships can be quite formal or distant. But because of a concern that somebody might “lose face,” scientific research can also be hindered by these cultural values. Research may not proceed freely, but must be checked against how the results of the research will make other people, institutions, or even national policy look. It can only be published if it affords the right people adequate “face,” and as long as it does not question the motives or actions of the ruling authorities (in all fairness, these aspects are true, to some extent, of science done anywhere). Another side of this same issue is that if one has the right connections (to the publisher or to the authorities), this affords a distinct advantage in getting published. In few cases is true peer review followed. People are aware of these confounding variables to good science, so many people are suspicious of the validity of published literature.

How can science proceed in such an environment?² Chinese people are bright and highly motivated. They want to improve in this area. Policies need to be established and enforced against fraud. This is taking place in China as it seeks to improve its legal system. More global collaboration can also spread good science practices.

These obstacles to science are one reason so many gifted Chinese scholars wish to earn their degrees in the West and remain here to work afterwards. China has a long history of valuing education and learning, and has many very bright individuals. But the current system prioritizes social and political stability above all else. This system keeps people in science from excelling on their own merits and often reduces everyone to a common denominator of mediocrity. In the West, we take for granted the culture of transparency and honesty necessary to sustain science.³

If you work overseas, be aware of how history, politics, and culture influence the way science is viewed and carried out. One must resist the temptation to criticize unfamiliar attributes of the host culture. Rather, one must seek to understand how these attributes affect the way science is perceived, both in good and bad ways.

Global Research

Networks of collaboration between Western and Chinese scientists are extensive. Along with globalization on other fronts, interest in global research is growing among Westerners. This climate creates the potential for increased awareness and increased sharing of information and resources toward the common purpose of science, including the solution of shared problems. However, doing research in a developing country, I have become aware of the imbalance that exists in power, knowledge, and resources between the West and most of the developing world. Consequently, as Westerners doing research in developing contexts we need to self-consciously develop and nurture true collaboration with our national colleagues. This is part of Christian humility.

It is essential to take the time necessary to build a research project and research team that is truly representative of what the local collaborators know and value.⁴ It is easy to proceed with our agenda and to think it is enough just to keep our collaborators informed—perhaps giving them a copy of the publication or report when it is completed. But this is not enough. Out of respect for them as colleagues and as our hosts, and out of gratitude for the opportunity to do research among their people, I believe we need to allow them to contribute, shape, and ultimately own the research itself. We must be patient enough to bring our national collaborators along at their pace. In this way, we not only get a final research product that is valid and truly reflective of the local situation, we also benefit from the unique contributions of the local scientists.

Our Approach to Research

The work of Evergreen began as a program aimed primarily at clinical care and clinical training. As we saw the need, our team moved into conducting research to guide our work.⁵ Though this research is low budget and unsophisticated, it is important to our work. It is conducted to explain an observation or to test the effectiveness of an intervention. For example, in 1999, after three years of work carrying out a rickets prevention program, we surveyed 229 children, analyzing 62 variables. This work was enlightening for all involved, and helped us modify our prevention strategy. Research such as this has been cooperative, and has proven crucial in guiding our work and building mutual understanding with our local colleagues.

We strive to conduct research that has high social validity. Social validity refers to the societal value and practical significance of a research or intervention program.⁵ Of course, all research should be grounded in good science, but it is possible that research with high scientific validity and grounded in good science is threatened by low social validity. For example, the research may not reflect the most urgent health problems in the community; or the proposed interventions may be too expensive to be sustainable locally without external funding. A common

problem is that an effect can be found under highly controlled circumstances, but without those specific circumstances, the program stands no chance of survival. We hope to do research with high social validity, in locally appropriate ways, with the participation of the local people, and thus increase the capacity of local people to do similar research in the future.

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As an organization, we occupy a unique position in the research world. Being “on the ground” in a developing country, we have an understanding and an access that few Western researchers have. I hope that in the future I will be able to serve as a link between researchers, research institutes and the frontlines in international health. It would be good if more Christian colleges in North America (or elsewhere) became involved in ministry situations like these. The colleges bring expertise and name recognition to the field, and get a unique opportunity of participating in international research that is a part of building the kingdom of God! The Chalmers Center for Economic Development at Covenant College is an example of a college-based program that links researchers with opportunities in the developing world. They conduct research useful to guide programs in micro-lending and poverty elimination.

Personal Ambitions

I admire some of the earliest scientists. In addition to their personal professions (farming, ministry, medicine, etc.), they satisfied their curiosity by doing science experiments and research in their free time. Sundays were devoted to Christian nurture and fellowship, and the study of theology. They conscientiously wrote down thoughts and observations on topics such as science, natural history, ecology, humanity and Christian faith. They enjoyed rich and stimulating lives. I would like to aspire to their level of professional and spiritual fruitfulness.

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*I hope that
ASA members
will continue
to expand their
influence
through
research and
teaching
collaborations
around the
world. Such
efforts
undoubtedly
will strengthen
us as
individuals and
as an
organization,
and hopefully
will allow us
to be a blessing
to the world.*

Upon completion of my dissertation, I will resume my previous role in China. Working with a team of seven other Westerners who are committed to work in China long-term, I want to expand the scope of our programs and increase the number of beneficiaries for each program. I also desire to better train national colleagues to build and manage these programs. I hope to conduct simple, high quality research that helps us to determine what needs to be done and how best to do it. This research will be applied in nature and, I hope, lead to the improvement of existing programs or the establishment of new ones. Furthermore, as a Christian service organization, we desire to be a blessing to the Chinese church as we do it.

I hope many of my readers will have the opportunity to be involved in teaching or research in another country. An opportunity like this can be refreshing and enlightening. We have so much to learn from the many wonderful cultures and people around the world. If you do have this opportunity, remember to consider what science means in the historical, political, and cultural context of the country to which you go.

Conclusion

Politics, history, and culture inform the way science is perceived and carried out. It is important that we take these contextual variables into account when considering how science is to be done in a given country. Surely we can benefit by learning from people of another cultural setting. Likewise, there are contributions Westerners can make in the developing world. I hope that ASA members will continue to expand their influence through research and teaching collaborations around the world. Such efforts undoubtedly will strengthen us as individuals and as an organization, and hopefully will allow us to be a blessing to the world.

In this paper, I have tried to extend discussion within the ASA around the topic of "Internationalizing Science" by sharing from my personal experience. I thank God for giving me work in China that is a fascinating blend of service, ministry, and applied science. For those interested, many similar opportunities await you as well. ❁

Notes

¹Interestingly, some Chinese people consider Christianity to be a religion of reason, rooted in history, and engaging of the human mind. This is in contrast to Buddhism and Daoism that are mystical and ahistorical. The "religion is superstition" rhetoric may come from years of political indoctrination along these lines, for historically Chinese people have been very religious, if in an eclectic and syncretistic way.

²Japan shares these cultural values in large measure, but science in Japan has been very successful and is very advanced. A good legal system helps to control the negative consequences of these values, and enhance the positive results of these values, e.g., respect for others, and loyalty to people and to employers.

³Is it possible that modern relativism in the West threatens to undercut the precious foundation upon which our success in science has been built?

⁴A. Costello and A. Zumla, "Moving to Research Partnerships in Developing Countries," *British Medical Journal* 321 (2000): 827-9; and C. Sitthi-amorn and R. Somrongthong, "Strengthening Health Research Capacity in Developing Countries: A Critical Element for Achieving Health Equity," *British Medical Journal* 321 (2000): 813-7.

⁵E. S. Geller, "Where's the Validity in Social Validity?" *Journal of Applied Behavioral Analysis* 224 (1991): 189-204; R. A. Winett, J. F. Moore, et al., "Extending the Concept of Social Validity: Behavior Analysis for Disease Prevention and Health Promotion," *Journal of Applied Behavioral Analysis* 24 (1991): 215-30; and D. Stokols, "Translating Social Ecological Theory into Guidelines for Community Health Promotion," *American Journal of Health Promotion* 10, no. 4 (1996): 282-98.

⁶This involved research in areas such as children's nutrition, hypertension, education methods, participatory learning, seeds and soils, and poverty elimination. Feel free to contact the author if you are interested in any of these areas.

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