Traditional Medicine and Pseudoscience in China: A Report of the Second CSICOP Delegation (Part 2)

This is the second of a two-part report of a recent CSICOP delegation to the People's Republic of China. In this article the authors describe their participation in a symposium on pseudoscience in China, held in Beijing, and their further interactions with practitioners of Traditional Chinese Medicine in Shanghai.

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In Part 1 of this report (*SI,* July/August 1996) we discussed the principles of Traditional Chinese Medicine (TCM) and our observations of how it is practiced today in the People's Republic of China. We also described research we had observed during our visit to China that is attempting to identify those empirically verifiable portions of TCM that could be incorporated into scientific medical practice. This opportunity was afforded us by an invitation from the China Association for Science and Technology (CAST) to visit various centers in China and to participate in a symposium on pseudoscience held in Beijing in June of 1995. In this article we address the broader topic of the growth of pseudoscience in China, and present additional

observations of TCM as seen in centers in Shanghai.

The CAST Symposium

Part of our stay in Beijing was occupied by a seminar sponsored by CAST and the State Science and Technology Commission. There, Chinese scholars and physicians described the problems created by pseudoscience in their country. These authors and their fellow member of the delegation (Andrew Skolnick of the *Journal of the American Medical Association*) traded similar experiences from the U.S. and Canada. We had expected this to be one of the highlights of our trip, and we were not disappointed. CAST had assembled an impressive roster of social, physical, and medical scientists from various parts of China who described the obstacles that belief in Qigong[1] and some of the extreme claims of TCM have put in the way of their efforts to improve scientific literacy. From these presentations we achieved many insights that would otherwise have been much more speculative.

Brain research laboratory at the Department of Neurobiology, Shanghai Medical University.

All Chinese speakers at the symposium made a clear distinction between "internal Qi" and "external Qi." The former equates roughly to what we would call "psychosomatic medicine"; while believers consider the latter to be a supernatural life force that, like psychokinesis, can affect matter outside one's body (believers refer to this as "special ability" or "extraordinary functions of the human body"). Belief in this dubious power was repeatedly defined at the symposium as China's major pseudoscience problem. Qigong was briefly outlawed during the cultural revolution (1966–1976) because it seemed too spiritual for the reigning Marxist materialists. It has since managed to stage a comeback by masquerading as a science. Qigong masters and their disciples routinely defraud the public with conjuring tricks and falsely present themselves as spiritual healers (Lin et al., in press). Honest practitioners of TCM eschew such deceptive practices, but they still adhere to the mystical notion that an imbalance of internal Qi energy underlies all illness. Many of the TCM doctors we interviewed still believe that specially gifted healers can use their external Qi to cure diseases by restoring the balance of a sufferer's internal Qi.

A few Chinese scientists we met maintained that although Qi is merely a metaphor, it is still a useful physiological abstraction (e.g., that the related concepts of Yin and Yang parallel modern scientific notions of endocrinologic and metabolic feedback mechanisms). They see this as a useful way to unite Eastern and Western medicine. Their more hard-nosed colleagues quietly dismissed Qi as only a philosophy, bearing no tangible relationship to modern physiology and medicine.[2]

The first group of speakers at the CAST symposium concentrated on external Qi. After Chinese investigators and the earlier CSICOP delegation had exposed several prominent Qigong masters as charlatans (Alcock et al. 1988), the government was persuaded to crack down on their ilk (some have gone underground, but many still continue to enjoy protection provided by high-level state officials). We did not determine the extent of the crackdown, but we learned that many Qigong masters are still active, especially in the countryside. We were also told that we would not be able to observe any masters or "special ability" children because they would no longer cooperate. This was disappointing but it is a tribute to our hosts' debunking efforts that local performers are now too wary of being caught, as they were when exposed by James Alcock, James "the Amazing" Randi, and the other members of the first CSICOP delegation.

Mr. Lin Zixin, the retired editor of China's *Science and Technology Daily* and a CSICOP Fellow, was one of our principal hosts. At the symposium, which he helped organize, he discussed the extent of belief in pseudoscience in China. He credited the 1988 CSICOP delegation with helping to tarnish the reputation of the Qigong "superman," Xiao, but admitted much remains to be done. He compared widely held superstitions about the power of external Qi in China to the beliefs that inspired the Japanese sect, "Aum Shinri Kyo" (the cult that attacked the Tokyo subway with nerve gas). Mr. Lin, one of China's top scientific journalists and policy experts, described the extent of superstition in China as shameful and a threat to the nation's technological development. Scientific literacy is more important than ever as China tackles the arduous task of modernizing its economy, he said, but superstition continues to impede progress. Mr. Lin firmly reiterated his organization's support for CSICOP's efforts to combat pseudoscience worldwide.

Professor Qui Renzong of the Chinese Academy of Social Sciences compared the development of American and Chinese pseudoscience. He drew parallels between the concept of external Qi and the mysterious nonmaterial forces posited by parapsychologists, such as psychokinesis and extrasensory perception. Professor Qui echoed Mr. Lin's assertion that the Qigong movement has had a negative influence on Chinese society. Professor Qui lamented the fact that it has also been psychologically damaging for some devotees, and that even some scientists have been duped into believing in the power of external Qi—for example, an ardent promoter is Professor Qian Xuesen, China's foremost rocket scientist and a former professor at the California Institute of Technology. Professor Qui concluded with the memorable phrases: "It's only your private experience, if it is not repeatable," and "pseudoscience is an infinite regression of excesses."

Professor Wang Guozheng of the China Society for Dialectics of Nature continued the theme that pseudoscience is becoming a major social problem. He described his investigation of "seeing with ears," a trick similar to the "blind reading" exposed by Martin Gardner in his famous article on the "peek-down-the-side-of-the-nose" ruse.[3] Professor Wang ended this inquiry when he concluded that it was a worthless fad that would disappear on its own. Apparently it did not, despite its affront to official Marxist dialectical materialism. In ten years, not one claim had been substantiated, yet popular belief continued to grow. Such concerns led Professor Wang to found the Society for the Protection of the Scientific Spirit. Its aim is to promote scientific attitudes and combat the growing influence of pseudoscience. The society has encountered opposition from paranormalists, such as when a Qigong advocate who was rejected as a speaker at one of its meetings disrupted the proceedings by trying to force his way onto the program physically. It seems Chinese skeptics are vulnerable to many of the same tactics as those endured by their Western counterparts.

Dr. Zhang Tongling, professor of psychiatry at Beijing Medical University, presented her research on negative effects of Qigong practices. She believes that there is no such thing as Qi, but she found that some vulnerable people, drawn into the Qi subculture, have been harmed psychologically by obsessional involvement with these breathing, meditative, and movement exercises. Dr. Zhang now runs a clinic for former Qigong extremists. Her study of 145 cases from ten provinces found that these casualties were relatively well educated—about half were high school graduates or above. Forty-four were classed as workers, thirty-nine were government employees, thirty were students, and thirty-one were engaged in scientific research. The group was found to be highly suggestible and their symptoms were related to various alleged effects of Qi contained in books they had read. Dr. Zhang described their responses as a form of mental illness, probably the result of latent psychiatric problems that were exacerbated by fanatical immersion in Qigong exercises. Many of these problems looked like those we would call hysterical or psychosomatic symptoms (Shorter 1992). For example, they reported feeling Qi surging through various parts of their bodies, and some would experience overwhelming lassitude that they attributed to Qi suddenly draining from their bodies. In other cases, experiences were provoked that were psychotic, including visual and auditory hallucinations, delirium, and feelings of being possessed by animal spirits. Some exhibited symptoms we would classify as paranoid, such as the conviction they were being harmed by the master's power or that Qi had imbued them with extraordinary skills and a mission to cure diseases or save humanity. Some patients felt elated, perhaps manic, after their prolonged exertion, while others were left uncomfortably anxious, depressed, and suicidal. The severity was the worst in those who spent many hours per day immersed in Qigong exercises and in those with a long history of preoccupation with religious or superstitious pursuits. Dr. Zhang's portrayals were reminiscent of people we had encountered who were obsessed with alien-abduction fantasies or had become fanatically immersed in Transcendental Meditation, Scientology, or irrational health schemes, leading at times to behavior that bordered on the delusional.

At Shanghai International Airport. Andrew Skolnick with two of the delegation's hosts. L. to r.: Chen Hai Qiang, Andrew Skolnick, Xiao Wan Quan.

Professor Guo Zhengyi, deputy director of CAST, has visited the United States where he studied organizations dedicated to spreading pseudoscience. In his talk, he compared them to similar movements in China. He described a Mafialike network in China that has spread its influence by promoting (allegedly real) magical powers and fortune-telling in conjunction with acrobatic shows. These shady figures bill themselves as the future of science but, like pseudoscientists everywhere, they mangle all valid scientific principles. Their lucrative scams include Qigong demonstrations composed of fake acts of clairvoyance, superhuman physical strength, and "possession by animals." Professor Guo likened the practices of these roaming hucksters to practices that were common in feudalistic times, a theme that was taken up by his colleague, Dr. Yuan Zhong. Dr. Yuan emphasized that official materialist doctrines have merely suppressed, not eliminated, the strong desire of the masses to believe in ancient spiritual entities and magical powers. The pseudoscientific patina of Qigong has allowed these old religious beliefs to reemerge in a way that is less likely to arouse official ire. Dr. Yuan referred to Qigong as a pseudoreligion, one that is growing as the regime relaxes its demands for strict ideological conformity. Occasionally, the chicanery of some of these impostors reaches proportions that spur the government to intervene. The official responses were not spelled out, but we discovered in private conversation that these tricksters are usually warned and fined.

Professor Zu Shuxian of Anhui Medical University was one

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of the most trenchant critics of Qi as a medical concept. Having done postgraduate training in epidemiology at the University of Virginia, he was well qualified to discuss why problems of medical quackery are worse in developing countries. Particularly in rural areas, folk-healing traditions and modest education make it difficult for people to distinguish between legitimate and bogus doctors. In addition, developing countries have as yet little in the way of consumer movements that could help protect citizens from quacks. Dr. Zu denounced the press for promoting quackery and for its apparent inability to distinguish between scientifically valid and sham treatments. He lamented the tendency to credit patient satisfaction instead of rigorous testing as the measure of therapeutic success. Fraudulent medical institutions are now competing with legitimate ones for money, while government funding for university research is diminishing. Once again, China's problems parallel our own.

Also familiar to us was an interruption by a student at this session. He complained that scientifically trained Chinese physicians do not spend enough time with patients and do not offer enough emotional support, and that this feeds the popularity of quacks.

Beyerstein, Sampson, and Skolnick delivered papers dealing with various aspects of fraud and pseudoscience in health care and the proper methodology for testing putative treatments.

The CAST conference made it apparent, as Michael Fumento has titled his recent book, that science is under siege—not just in North America and Europe, but in China, as well.[4] There, as here, superstition, quackery, and pseudoscience have infiltrated academia, and some prominent scientists and philosophers are among the leading apologists. Their appeal to ancient magical ways of thinking, cloaked in pseudoscientific language, sounded depressingly familiar to us. In China, pseudoscience is becoming increasingly competitive with science for public support and government funding. The extent to which Chinese criminal elements have used superstition and pseudoscience to bilk the gullible public was news to us, however. Chinese academics are becoming more aware of possible psychological harms resulting from involvement with pseudoscience and quack sects and cults. In 1994, awareness of these growing problems led the Chinese government to issue a proclamation decrying the rise of superstition and pseudoscience and the erosion of science education (Sagan 1996). It seems that for many Chinese, the concept of Qi supplies an all-encompassing vision of life and its role within the cosmos as a whole. Qi has become a comfortable explanation for everything. Unfortunately, something that purports to explain everything explains nothing.

Meeting with the President of the Shanghai University of Traditional Chinese Medicine. L. to r.: Tai Zischer (one of the delegation's hosts), unidentified TCM physician, Andrew Skolnick, Xiao Wan Quan (delegation host), President Wang Ling Tai, Wallace Sampson.

On to Shanghai

After a day spent trekking the Great Wall, our tour of China then moved on to Shanghai. There we were hosted by friends of CAST officials who were academics, but not themselves associated with scientific institutions. They were able, however, to introduce us to a variety of practitioners of TCM. Before exploring local TCM facilities, we were given a chance to interact with conventional biomedical scientists during a most interesting tour of the brain research laboratories at Shanghai Medical University. The research problems, techniques, and apparatus we encountered at this well-equipped institute were familiar to us; and the work we discussed with these Chinese neuroscientists revealed that they are working at the forefront of their fields. After this tour, our focus shifted back to TCM.

We next visited the Shanghai University of Traditional Chinese Medicine and its affiliated Shu Guang Hospital—the largest TCM complex in China. The views expressed there were somewhat different from those we had encountered at the Beijing TCM Institute (Beyerstein and Sampson 1996), especially with regard to integration of scientific and traditional medicine. At the Shanghai institute, where the primary mission was the teaching of TCM, the president, Dr. Wang Ling Tai, was also a gastroenterologist who practices scientific biomedicine. As in Beijing, we were told that TCM was requested by less than twenty percent of the patient population. (It seems that self-medication with herbs is more pervasive in the country as a whole, however. The fifteen-to-twenty-percent figure refers to those patients who choose to see a TCM doctor.) After a long and enjoyable meeting with Dr. Wang, we were shown through the complex, which appeared similar in setup to the clinic complex in Beijing. We were shown a major manufacturing facility for antibiotics that we were told were derived originally from traditional herbal medicines. This aspect of TCM made sense to us because we knew that penicillin, for example, was derived from molds that had long been used in European folk remedies (there are frequent historical references to use of moldy bread for dressing dirty wounds).

While in Shanghai, we also toured the largest herbal pharmacy in China. TCM diagnosticians occupied booths around the periphery of each floor in this multistory building, while herbalists busily moved about the center, filling prescriptions according to the diagnosticians' recipes. With rapid, animated movements, they grabbed handfuls of dried vegetable and animal matter from rows of drawers stacked in massive cabinets that resembled floor-to-ceiling library card files. The ingredients were dropped somewhat unceremoniously on hand-held balances and then mixed on large sheets of paper. These were

then folded into dispensing packets and sold to waiting patients, mostly for preparation as herbal teas. The measurements struck us as rather imprecise by Western pharmaceutical standards, but greater accuracy might have been illusory because a perennial problem with herbal remedies is that the concentrations of active ingredients in the raw materials can vary greatly from source to source (due to climate, soil conditions, etc.). Also on sale were a variety of over-the-counter remedies that we also saw in department stores, corner pharmacies, tourist centers, and airports throughout China. Some of these, to our dismay, included preserved bear gall bladder, ground horns and penises of various wild animals, and other animal parts apparently sold primarily for their alleged ability to enhance sexual potency.[5]

We also saw North American ginseng prominently displayed in these stores—it is highly valued in China. Although many bold therapeutic claims are made for ginseng, its scientifically demonstrated effects are more modest. Its complex chemistry stimulates several bodily systems. Ginseng can act as a pick-me-up in a number of ways: it produces caffeinelike effects in the central nervous system, enhances carbohydrate metabolism and glycogen synthesis, and may stimulate the heart because it contains some digitalislike components (similar to those found in the common foxglove). It also has histiminic activity, and it contains steroids that can affect the hormonal system (Siegel 1979).[6]

The dispensing table at China's largest traditional herbal pharmacy, Shanghai.

At the Shanghai traditional pharmacy, we encountered for the first time TCM doctors who still use the ancient technique of pulse diagnosis (see Wallnöfer and von Rottauscher 1975). People are said to have fifteen different pulses detectable by traditionally trained healers although these have never been demonstrated scientifically. For us, the doctor placed his fingers on the pulse, stared vacantly into the distance for about a minute, as if absorbing its meaning, and then told us our diagnoses (none of which was accurate). He then wrote a TCM prescription for an off-the-shelf concoction that we filled at the counter. We were also diagnosed by a woman who held our hands and placed a small electrical probe at various points on our palms. From our muscle spasms, grimaces, and verbal descriptions of the tingling sensations, she arrived at a diagnosis, again one that would be news to our family physicians back home.

A Meeting with Professors of TCM

Our main conference in Shanghai was with about a dozen prominent TCM physicians affiliated with Shu Guang Hospital. Here, the flavor was quite different from the CAST symposium in Beijing, skepticism being much less pronounced. The Chinese doctors, most of whom had scientific medical training in addition to their traditional specialties, each gave brief introductory statements. The session was then opened for discussion and questions. We can best describe the event with a sample of our questions and the answers given. We asked our questions as naive Westerners, but with a perspective of scientific inquiry. The answers, as will be evident, highlighted the differences between the scientific outlook and that of TCM. The answers are not verbatim in every case because some were conveyed through a translator.

Q: How are the roles of Western-trained and TCM physicians different?

A: One example is a woman with cancer who failed with Western treatments and was then treated with TCM and lived four years longer than expected. [This exemplifies one of our major conclusions, namely that TCM still relies predominantly on anecdotal evidence—its practitioners exhibited very little understanding of the need for controlled clinical trials. Most of the group seemed to lack knowledge about how to do scientifically valid evaluations of their techniques.]

Q: Do you treat different cancers differently, or do you use the same treatment for all?

A: Every case is different, and treatment is different. [Ironically, TCM sees all disease as resulting from the same cause (Qi imbalance), but it sees each patient's case as unique. This answer also illustrates TCM's preoccupation with surface manifestations rather than trying to reveal a more limited number of underlying pathological processes that might manifest themselves in a wider variety of symptoms.]

Q: How do the different cancer remedies work, and what are the biochemical mechanisms for combatting cancer cells?

A: We are trying different methods to prevent cancer, especially in high-risk breast cancer patients—17,000 professional women. [Perhaps something was lost in translation.] Many traditional medicines are static. TCM is developing. We are examining curative effects and theoretical basis. We regard the patient as oneness. Every patient is "a small world." A major reason for interest in natural developments is traditional Chinese herbs. People are panicking about environmental chemicals, effects now being reversed by TCM. There are breakthroughs. Look at TCM from the Chinese perspective. We say, "Water the ponies [peonies?] well." [For example, pay attention to internal stresses of the patient.] Rather than killing cancer cells, increase internal factors to bring one into balance. TCM doctors see a change in the patterns of things. TCM treats imbalance of the negative and positive sides of things. [In other words, it does not treat disease processes per se.] TCM works well in circulatory disorders—it corrects blood circulation. [This was typical of many answers we received in that it sidestepped the original question and substituted a rambling string of metaphors instead.]

Q: How about ephedra—herbs containing ephedrine—are

there two concepts of how it works—pharmacological and TCM?

A: We have adopted several new ways of treating, and that is one [a probable translation problem, so we tried again].

Q: What is the rationale for the treatment with ephedra?

A: We have a division here—TCM and Western ways. Doctor recommends the method—surgery, medicine, or TCM—and the patient decides. Most doctors would use Western medicine first for acute problems, then TCM if needed. Such as with gallstones: operation first, maybe we would use TCM afterward. Same with cancer. Doctors agree on how to combine them. [It was apparent we were not going to obtain a direct answer, and so we moved on. The gist of the remainder of this part of the discussion was that TCM is seen as a way of strengthening the body to resist disease in general, not a means of combatting specific diseases.]

Q: [To a nephrologist (kidney specialist) who also uses TCM.] How does TCM treat a new disease or change as new concepts of disease arise? Does TCM change?

A: We combine TCM and Western medicine in treatment of kidney disease, but we have different ways in different phases of the illness. At first, we use TCM to prevent progression. In later stages, we also adopt Western ways. We also use TCM in transplants. [Again, we did not pursue this indirect answer.]

Andrew Skolnick having his pulses read by a traditional Chinese physician, Shanghai.

After the question-and-answer session, several TCM physicians tried to clarify earlier comments with the following statements:

Because of difficulties with cults, we have different definitions [for Qi, etc.]. TCM and Western medicine have sharp differences in their concepts.

Practice speaks the loudest. Results count most. Science is not absolute; it has its limitations, and is also developing. So, each has its own advantages. For example, Western [medical] science used to be [exclusively?] biological. Now it is biological and societal. Combining the biological, psychological, and societal occurred 1,500 years ago in China. Western medicine is developing in the same way. TCM was ahead of Western medicine.

TCM works and cures where Western medicine does not; Western medicine is more toxic,[7] so they are complementary and can learn from each other. We hope TCM and Western medicine can help and understand each other.

Western proponents say they know what works and now present a body of knowledge. Another way to look at it is that TCM considers the macro or whole body; Western medicine considers the micro. TCM does not apply to all cases; it is better for recuperative and chronic cases.

Patients understand this and know where to go. TCM has not only a philosophy, but a background. It is bidirectional. Both TCM and Western medicine concern homeostasis; TCM includes heart and spirit. From the lab perspective, TCM can improve senile dementia, especially Alzheimer's [disease]. Some biochemical levels return to baseline. We also see aging retarded in humans and animals, and there are other neurochemical and immune changes as well.

A notable exception to the generalities presented by most of the rest of this group of TCM physicians was a discussion we had with Dr. Yan De Xin. A scientist who studies the chemistry of traditional herbs, he expressed the belief, in private conversation, that many traditional medicines will be found to contain active ingredients of interest to scientific medicine (some of this has already happened—see, e.g., Lewis and Elvin-Lewis 1977). But, unlike most of the sentiments expressed during the Shanghai conference, Dr. Yan was only willing to grant that efficacy on the basis of scientific trials. He has been trying to extract possibly active ingredients from a number of traditional herbs and to subject them to proper double-blind tests. His understanding of what needs to be done was impressive but, like researchers everywhere these days, he has been hampered by funding shortages.

Our meeting with this group of TCM experts ended with a formal dinner, each of the numerous courses flavored by a different Chinese herb used by traditional Chinese physicians. It was explained to us that TCM makes little distinction between the health-giving properties of foods and medicines.

External Qigong

Although we saw no external Qi demonstrations in China, both of us have observed such exhibitions in the large immigrant Chinese communities in our home cities. One was at an American Medical Student Association meeting in San Francisco, April 8, 1995. It was performed by Effie Poy Yew Chow, R. N., for an audience of about one hundred students. She seemed to advocate a combination of Ju Jitsu, suggestion, and "applied kinesiology."[8] She also claimed (but could not demonstrate), as we heard in China, that Qigong masters can transport Qi energy several thousand miles to alter the molecular structure of water. The students seemed to enjoy the lecture and, surprisingly, none challenged Ms. Chow's rather extreme claims. Barry Beyerstein had an equally unfulfilling encounter with a famous Qigong master in Vancouver.[9] Previously, this author's brother, Dale Beyerstein, had investigated some prominent TCM practitioners in the Vancouver area and found them dangerously wanting in medical knowledge (D. F. Beyerstein 1990).[10]

Conclusion

Looking back at our discussions with TCM proponents in China, it often seemed that our questions and their answers came from two different worlds. It soon became apparent to us that this is equally true when the scientific and traditional medical communities in China try to communicate. This was obvious in the wide gap between the remarks of the academics and physicians gathered by CAST in Beijing, and the answers given by most of the TCM physicians we encountered in Beijing and Shanghai. The former spoke in terms we could understand, emphasizing the requirement to support claims with evidence and the need to understand such demonstrable effects TCM might produce in terms of scientifically verifiable biological mechanisms. Although the speakers at the CAST meeting in Beijing tended not to demean TCM during their presentations, several of them dismissed it in private conversations. The rest refrained from making rationalizations for TCM.

The statements of the TCM physicians, on the other hand, tended to be rambling, global, and tangential (this was not merely a language barrier, for many of them spoke excellent English). The traditionalists were difficult to pin down because when they had no available answer, the question would be redirected. While TCM physicians downplayed the importance of statistical approaches and placebo-controlled clinical trials, they did not hesitate to enlist such data when it seemed to their advantage. We came away with the strong feeling that the TCM community, with a few exceptions, does not really understand the power of the placebo effect nor the need for double-blind clinical trials. They seemed not to comprehend why we were not impressed by testimonials or anecdotes about individuals who had recovered after TCM treatments. Many claims seemed inflated, such as that for TCM's effectiveness in Alzheimer's disease and AIDS (see, e.g., Hou 1991). In the end, we were left with the same sense of frustration we often felt after arguing with advocates of "alternative medicine" at home. Both exhibit an essential vagueness when explaining the mechanisms presumed to underlie their treatments. Both are prone to assume that metaphors count as explanations and that anecdotal evidence can substitute for systematic verification of claims.

Andrew Skolnick being diagnosed by a TCM electrical palm stimulator.

Several speakers in both Beijing and Shanghai laced their discussions with political references, for example, to the evils of feudalistic times, the unwillingness to be subjected to logic (dialectics), and inhibitions to social progress. It seems that the practice of TCM and the concepts of internal and external Qi place China in a dilemma. Advancement of these ideas, especially overseas, increases China's prestige and is a matter of cultural pride. Yet the inherent mysticism and magical thinking in these notions are an embarrassment to the Marxist rationalism of the government and to the scientific community as a whole. Furthermore, the growing involvement of criminal elements in paranormal spheres, as occurs to some extent in all countries, is considered a growing threat to social order. Overall, we perceived a delicate balancing act, between toleration and encouragement of TCM on the one hand, and attempts to restrict its more extreme manifestations, such as external Qi quackery, on the other.

We ended our tour unconvinced that Traditional Chinese Medicine has objectively proven its claims to cure any specific diseases. Acupuncture has some mild analgesic [lowered sensitivity to pain while conscious] properties and Chinese herbs have already yielded to scientific analysis some useful drugs—undoubtedly more will follow. We could find no scientific support for the use of cupping, moxibustion, and acupuncture for infectious diseases, deafness, and congenital deformities. We acknowledge the emotional comfort Chinese patients suffering from chronic or fatal disorders receive from TCM ministrations, but we saw no evidence to back up the oft-heard assertion that TCM actually works where Western medicine has failed. Insofar as TCM offers a degree of comfort and hope for those in difficult situations, it seems to perform a similar role to those of vitamin supplements, chiropractic, homeopathy, naturopathy, and therapeutic touch, our homegrown Western pseudomedicines.[11]

Notes

1. "Qi" is the name Chinese philosophy gives to a scientifically undetectable "force" or "energy" believed to permeate everything in the universe. TCM asserts that imbalances in the flow of Qi in anatomically unverified "meridians" are responsible for disease, fatigue, etc. Acupuncture, Chinese herbs, massage, etc., supposedly restore well-being by rebalancing the flow of this mystical essence. Qigong is a set of mental and physical exercises akin to those of Tai Chi Chuan and Ai-ki-do that also promise spiritual and physical benefits by channeling this mysterious energy. With its mental disciplines and postural and breathing exercises, Qigong has long been practiced as a form of self-hypnosis that claims to promote relaxation and general health, much in the manner of certain yoga exercises. These days, practitioners of this aspect of the discipline call it "internal Qigong" to distinguish it from the much more dubious "external Qigong," which has enjoyed a dramatic rise in popularity in China and in the West. Devotees of external Qigong claim they can control the Qi force beyond their own bodies to debilitate their foes, achieve the sorts of allegedly psychic feats familiar to Westerners, and diagnose and cure physical ailments. Qigong masters have become rich and powerful in China, filling massive sports arenas for their demonstrations of magic and faith healing. Chinese skeptics who have exposed these Qigong hoaxers were among the hosts of the delegation that included these authors (Lin et al., in press).

2. As an example of why scientific physicians consider external Qigong to be quackery, take the following advertisement for a "Qigong Herbal Pillow" that appeared in the September 1994 issue of the English-language magazine, *China Today*, published in Beijing by the China Welfare Institute. The pillow, which sells for U.S. $198, is claimed to be effective for high and low blood pressure as well as for "insomnia, diseases of the heart, brain, and blood ves-

sels." It also allegedly "reinforces the kidneys," relieves rheumatism, "builds up the spleen," "stops pain," aids digestion, and "energizes the mind." According to the manufacturers, it is a "small-radar Qigong bionic device" that "works by utilizing the synchronicity of global and human magnetic fields and of trace elements, and through the magnetization of Chinese herbal medicines." Invented by the Qigong master Wang Shibo, it incorporates a "high-energy Qigong tube" that is supposed to generate its own power from the user's speech, breathing, and heartbeat. This causes it to vibrate in therapeutic ways; and its radiant power can help users "develop their special bodily abilities" (a common euphemism for psychic powers). The pillow is sanctioned by the Bai Zi Yuan Shen Qigong Research Institute and, according to the ad, it is effective for three years.

3. Gardner, M. 1981. Dermo-optical perception: A peek down the nose. *Science: Good, Bad, and Bogus.* Amherst, N.Y.: Prometheus Books, 63-73. (Originally published in *Science,* February 11, 1966.)

4. Fumento, M. 1993. *Science Under Siege: Balancing Technology and the Environment.* N.Y.: William Morrow.

5. While we are quite prepared to accept that certain herbal remedies contain biologically active ingredients that could be useful in medical practice (some have already met this criterion of scientific proof—see Lewis and Elvin-Lewis 1977), we see no such value in those concoctions made from organs of endangered species. Their rationale, as we point out in Part 1 of this report, is purely that of "sympathetic magic," the basis of all superstitious practices (see Note 6).

6. A good example of the "sympathetic magic" aspects of TCM (the belief that "like begets like") is that the price paid for ginseng root is not determined by the concentration of its active chemical ingredients. Rather, it is determined by the degree to which the variegated root structure resembles a human body. Roots with a greater number of distinct parts that can be seen as a head, torso, appendages, etc., fetch a higher price.

7. Wherever we went, TCM doctors tended to emphasize the toxic side effects of Western drugs while glossing over the well-known fact that herbal medications have potential toxicities of their own (Tyler 1985). Many "natural" plant substances are virulent poisons; others can have serious side effects for the digestive, cardiac, pulmonary, hepatic, renal, and nervous systems. A major drawback among traditional herbalists of all ethnic stripes is their insufficient education concerning these potential harms.

8. "Applied kinesiology" is a scientifically discredited technique for reading the "muscle weakness" that allegedly follows (instantaneously) exposure to certain presumed pathogens (refined sugar, food dyes, preservatives, and fluorescent lighting are favorite culprits). This pseudoscience should not be confused with the authentic discipline of kinesiology, which is the scientific study of the control of bodily movement.

9. A recent meeting of the B.C. Skeptics in Vancouver, B.C., Mr. Ge Yingcai, a famous Qigong master and healer who had immigrated to Canada. Mr. Ge had promised to demonstrate, under double-blind conditions, his ability to make distilled water taste sweet by irradiating it with his Qi energy. The audience was disappointed and annoyed, however, when, after a rambling two-hour lecture, the master announced that he was now too tired to participate in the controlled test. Mr. Ge said he had a degree in nuclear physics from Beijing University, but his interactions with several professors of physics in the audience revealed significant gaps in his understanding of basic science. Likewise, in discussion with Dr. Kirsten Emmott, a physician member of the B.C. Skeptics, Mr. Ge exhibited deficiencies in elementary medical knowledge. For instance, he had no comeback when Dr. Emmott pointed out that his claim to diagnose disease in his clients' organs by feeling pain in the corresponding ones in his own body was doubtful because the organs he referred to have no nerve supply that could signal such sensations (even if his organs could somehow magically resonate with those of his clients). Although Mr. Ge had specifically agreed to produce scientific studies to substantiate his conceptions of disease and his claimed cures, all he could deliver were the usual testimonials from satisfied customers.

The B.C. Skeptics were similarly frustrated when they issued a challenge to be scientifically tested to the Qigong master Yan Xin during his North American tour in 1990. Yan's associate, Wu Xutian, wrote saying that the skeptics only remained dubious because they had never seen a *real* Qigong master in action, but he declined to show them what his supposedly real colleague could do. In his letter of rejection addressed to Dale Beyerstein, Wu condescendingly dismissed the skeptics' challenge: ". . . Dr. Yan Xin and I are not interested in the very low level test which was very popular in China ten or fifteen years ago. He is busy on some cooperating research subjects with several important organizations in U.S." Wu suggested the skeptics should be content with some "scientific" papers by Yan which he enclosed. As usual, the claimed effects of Qigong were extremely unlikely by conventional scientific standards but were not published in peer-reviewed journals of any international scientific standing.

10. Dale Beyerstein, who suffers from diabetes, dropped several obvious hints in describing his complaint for each TCM doctor he visited (he listed the textbook symptoms but did not mention the word "diabetes"). He even prominently displayed his "Medic Alert" bracelet while having his pulses read, but none of the TCM doctors picked up on his diabetes (none even asked what the clearly marked bracelet was for!). The herbal remedies that were prescribed for Dale differed at the different offices and some of them would have been medically dangerous for a diabetic to take.

11. Many scientifically trained physicians accept that chiropractic manipulations could be beneficial for certain purely musculoskeletal complaints. However, medical scientists remain dubious about the underlying rationale for chiropractic still espoused by most of its practitioners. These theoretical "explanations" continue to fly in the face of scientific knowledge in the fields of anatomy and physiology (Jarvis 1987). Chiropractors who still insist that *all* diseases stem from spinal misalignments ("subluxations"), and can therefore be cured by joint manipulation, remain open to charges of pseudoscience. The same is true of the many chiropractors who continue to reject the germ theory of disease, oppose basic immunization, and use scientifically discredited diagnostic devices.

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