Traditional Medicine and Pseudoscience in China: A Report of the Second CSICOP Delegation (Part 1)

In this, the first of a two-part report on a 1995 CSICOP delegation to China, the authors discuss the historical rationale for Traditional Chinese Medicine (TCM), its involvement with the questionable Qigong movement, and the growing importation to the West of these practices by Western practitioners of "alternative medicine." They present their observations of how TCM is practiced at the major TCM facility in Beijing and describe their visit to China's preeminent neurophysiology lab studying the neurochemical underpinnings of acupuncture effects.

BARRY L. BEYERSTEIN and WALLACE SAMPSON

In 1988 the first CSICOP delegation to China looked into the claims of several Qigong (pronounced *chee-gung*)[1] masters and their young proteges. These child marvels supposedly possessed what Chinese admirers call "special ability" or "extraordinary functions of the human body." They were said to be able to alter the shape or color of objects in sealed containers and perform a host of other minor miracles. What the first CSICOP delegation (composed of most of the Executive Council at the time) found was that these children could not produce their effects under

close observation. In short, the whiz kids and their masters were performing unsophisticated conjuring tricks (Alcock et al. 1988). Also, in controlled tests, the delegation found the vaunted abilities of the Qigong masters to diagnose medical ailments to be unsubstantiated.

Despite such failures, medical uses of Qigong have continued to gain popularity in China. Along with other facets of Traditional Chinese Medicine (TCM), it has become increasingly fashionable in the West as well. Most observers consider TCM's growing reputation in China in the decades following the Communist revolution (takeover in 1949) to have been due primarily to a mix of practical necessity and political expediency on the part of Chairman Mao Zedong. With fewer than 30,000 scientifically trained physicians in all of China (most of them concentrated in the large cities and suffering from politically suspect class backgrounds), the Communist revolutionaries were faced with an immediate need to be seen as "doing something" about the dismal state of medical care in China at the time. With the economy devastated, hard currency almost nonexistent, and hostility emanating from most foreign capitals, the new regime saw little hope of soon being able to afford Western medical technology and pharmaceuticals for a population that was already approaching 600 million. Thus the Communist Party began a concerted effort to convince the masses that TCM, like other aspects of Chinese culture, was not merely equivalent but superior to decadent "imperialist" alternatives. This of course carried the added political bonus of fostering national pride and solidarity among a war-weary and fractionated people.

But while TCM was being touted to the masses by the elites, top party and military officials cynically kept for themselves the best treatments scientific medicine could offer. According to Mao's personal physician, Li Zhisui (Li 1994), Mao himself relied on Western methods to treat his many illnesses (except for a few folk practices carried over from his rural childhood). Trained in scientific medicine at an American-run medical school in China, Li immigrated to Australia after World War II. He was working as a medical officer for an Australian shipping company in 1949 when he was enticed to return to Beijing. Shortly afterward, he was appointed Mao's doctor, the post he held until Mao's death in 1976. Li had no other patients than Mao, Mao's hypochondriacal wife, Jiang Quing, and a few other Mao family members and top party officials. For them, Li had the latest Western drugs, surgical techniques, and medical equipment at his disposal, and a well-equipped portable hospital that accompanied Mao and his entourage on their frequent, impulsive romps around the vast countryside.

Although the health of the masses did begin to improve following the revolution, the herbal remedies, acupuncture, and moxibustion[2] dispensed by Mao's "barefoot doctors" probably contributed much less to the improvement than several phenomenal efforts in the public health sphere (after all, folk medicine had been the only treatment available to the masses up to that time and the state of their health had been far from encouraging). Recruited from the peasantry, the "barefoot doctors" were armed with exhortations from the ubiquitous booklets of Mao's quotations and training roughly equivalent to that of first aid attendants in the West. They organized vast and successful communal health projects. Sanitation facilities and access to safe drinking water were greatly improved and several parasitic epidemics were brought under control. At the same time, the spread of sexually transmitted diseases was contained and greater social stability allowed improvements in diet, perinatal care, and basic immunization (Horn 1976; China Report 1983).

TCM had been the treatment of the Chinese people since ancient times,[3] but having gained Mao's somewhat cynical imprimatur, TCM's leaders began to amass increasing political power in the new China. Western journalists who accompa-

Introduction

Paul Kurtz, Chairman of CSICOP

The Committee for the Scientific Investigation of Claims of the Paranormal has cultivated a long-standing relationship with scientific and skeptical colleagues in China. It began in 1987, when Mr. Lin Zixin, editor-in-chief of *Science and Technology Daily* (China's largest-circulation scientific publication), visited CSICOP's headquarters (then in Buffalo) and invited a delegation to visit China from March 21–April 3, 1988. The SKEPTICAL INQUIRER published three accounts of this significant visit: Paul Kurtz, "Testing Psi Claims in China: Visit by a CSICOP Delegation"; James Alcock, Kendrick Frazier, Barry Karr, Philip J. Klass, Paul Kurtz, and James Randi, "Preliminary Testing" (both Summer 1988); and Paul Kurtz, "The China Syndrome: Further Reflections on the State of Paranormal Belief in China" (Fall 1988).

Since that time, Mr. Lin spent a year in Amherst, New York, and frequently visited CSICOP headquarters and the adjacent Amherst campus of the State University of New York at Buffalo. A Chinese delegation composed of members of China's Popular Science magazine and association visited the United States, and six members of this delegation participated in a CSICOP conference in Dallas and visited skeptical groups in Boulder and Los Angeles.

In an effort to maintain contact, our Chinese colleagues indicated a desire for a third visit. Barry Beyerstein, Wallace Sampson, and Andrew Skolnick made the trip. We are glad to publish the first part of their article below. Part 2 will be published in the next issue.

A delegation of six Chinese researchers are participating in the first World Skeptics Congress in Amherst, New York, in June 1996.

We are also pleased that with this issue we will begin listing two contact groups in China. I should point out that the Chinese have published translations of many articles and books by skeptics. We hope to continue our dialogue.

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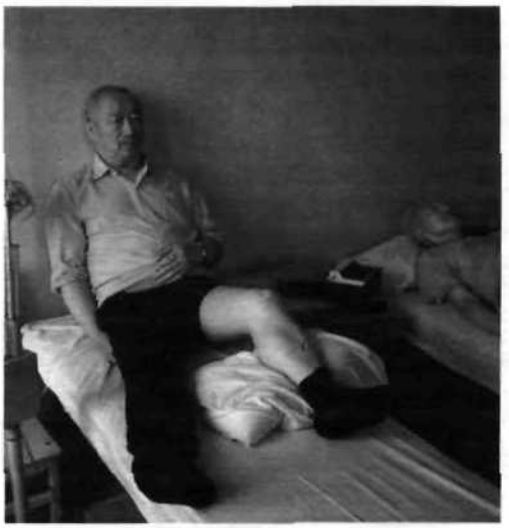
nied Richard Nixon during his historic rapprochement with the Chinese government were intensively courted by the TCM establishment, as were later delegations of Western doctors (China Report 1983; Skrabanek 1985). These delegations were shown major surgery being performed with acupuncture anesthesia. When columnist James Reston required an emergency appendectomy during Nixon's visit, he was widely, though erroneously, believed to have been given only acupuncture as a pain killer during the surgery. It was not until much later that it was revealed that the Chinese surgical patients observed by foreign delegations had been preselected for high pain tolerance and heavily indoctrinated beforehand.[4] It was also disclosed that these demonstration cases were routinely administered surreptitious doses of morphine in an intravenous drip that supposedly contained only hydrating and nourishing fluids (Keng and Tao 1985). In addition, it has since come to light that much of the apparently objective and well-controlled research on TCM emanating from Chinese medical schools during the tumultuous era of the cultural revolution (1966–1976) was falsified at the behest of the hospitals' scientifically unqualified political commissars to ensure that the "research" would support the party line.

Despite this prevarication, most experts today concede that acupuncture does have some analgesic properties (though its potency has been greatly exaggerated). Similarly, many herbal remedies have already been assimilated into scientific medicine.[5] On the other hand, proof for the hyperbole served up by some professors of acupuncture from the TCM institutes Barry Beyerstein toured during a visiting professorship in China in 1990 remains as elusive as ever. For example, he was told then that acupuncture can cure cholera, deafness, paralysis, cataracts, and mandibular overbite, among other things. Although the evidence was lacking, claims like these appealed to deep-seated longings in certain social movements that were emerging in the West during the 1970s. The "New Age" movement is only the latest in the long history of Western movements populated by seekers who have turned to the East for answers in times of disillusionment. As Huston (1995) has noted:

> The history of Sino-American relations is in part a story of Americans looking to the East and interpreting a huge, complex and, to an outsider, confusing culture in such a way that they see what they desire and fear the most.

Among New Agers in Europe and North America, there was an eagerness to embrace the "natural" and "holistic" philosophy they perceived in TCM. It fit nicely with their desire to replace the scientific worldview with mystical beliefs and, in particular, their willingness to credit virtually any healing claims, providing they are ancient or hail from exotic places.

TCM's growing popularity in Europe and North America is widely recognized. Its shaky scientific foundations and economic and politically driven push for legitimacy are perhaps less well known. When the authors' trip to China was conceived, the movement to make TCM part of the therapeutic mainstream in the West had already been 20 years in gestation. By 1995, the U.S. Office of Alternative Medicine had been created by Congress (not by scientists, it should be noted) and was sponsoring alternative medicine projects that were expected to provide hard evidence to justify some of these treatments.[6] TCM practitioners have recently requested that the U.S. Food and Drug Administration upgrade acupuncture needles from the "investigative device" category, and Congress has just passed a bill upgrading the official medical status of these needles. U.S. schools of TCM, felt by many to be diploma mills, are graduating practitioners who clamor for licensure. Twenty-eight states have already licensed lay acupuncturists, and most states allow physicians to perform acupuncture. Some states allow lay acupuncturists to be "primary care physicians" for industrial injuries (and be paid the same as licensed M.D.s and D.O.s). Seven states now have laws allowing any "licensed practitioner" to use any method he or she wishes, as long as the patient is informed in advance that the treatment lacks scientific validation.



A ward at the Acupuncture Clinic in the China Academy of Traditional Chinese Medicine in Beijing. Patient with acupuncture needles inserted in his leg for treatment of musculoskeletal problems. Next to his bed can be seen the electronic stimulator for delivering current pulses through the inserted needles. (Photo: Barry Beyerstein)

Likewise, unproven and possibly dangerous herbal remedies are widely sold in health food stores, herbalist shops, and by mail order in the U.S. and Canada. These products evade the regulations, which require prescription drugs to demonstrate their safety and efficacy scientifically, by means of a loophole that permits herbal remedies to be marketed as "food supplements."

A bill before the U.S. Congress would legitimize all unproven remedies in all states; and no longer would use of scientifically discredited treatments be grounds for discipline by professional boards. Practitioners of TCM stand to gain immensely from these political gambits. Much of the willingness of North Americans to support these trends has been due to uncritical media reports concerning the extent and effectiveness of TCM in China today. As several members of the Chinese scientific community became aware of these shifting attitudes in the West, they began to worry that their reputations were being tarnished abroad by the growing acceptance of the media-driven notion that Chinese medicine was undergoing a wholesale reversion to its ancient, mystical roots. Thus it seemed a mutu-

ally advantageous time for a North American team to look into the status of TCM in China. An invitation from the Chinese Association for Science and Technology (CAST) to these authors and Andrew Skolnick, associate news editor of the *Journal of the American Medical Association,* afforded us that opportunity. CAST has long been a foe of pseudoscience in China and welcomed the opportunity to strengthen the cooperative ties it had already forged with CSICOP.

What is Traditional Chinese Medicine (TCM)?

Every culture, including the Western culture, has evolved an indigenous system of folk healing (Atkinson 1956). Because of the body's natural restorative processes and the power of the placebo effect, many physiologically inert folk remedies have long enjoyed unearned credit for curing diseases. It is only in the modern scientific era that it has been possible to separate truly effective treatments from only apparently effective ones by means of double-blind, random-assignment, placebo-controlled tests. When submitted to adequate clinical trials, some ancient folk remedies have proven their worth; many more have not (Nolen 1974; Stalker and Glymour 1985; Skrabanek and McCormick 1990; Randi 1989; Barrett 1990; Pantanowitz 1994). It was our desire to see what progress the Chinese were making in scientifically evaluating traditional treatments that motivated our tour of the major TCM centers in Beijing and Shanghai during the summer of 1995.

TCM Library at the China Academy of Traditional Chinese Medicine in Beijing. A centuries-old herbalist's manual is preserved in an elaborate folding protective cover. (Photo: Barry Beyerstein)

Practitioners of TCM consider it an empirical "science" of healing that has proved its worth in Asian countries for more than 3,000 years (Wallnöfer and von Rottauscher 1975). According to Chinese government figures, there are now more than 2,000 TCM hospitals throughout the country (Hou 1991). Unlike Western scientific medicine, which aims to identify and counteract specific pathogens for different disease states, TCM views all illnesses as the consequence of a unitary cause, namely an imbalance of vital energies in the body. The term *Qi,* which translates roughly as "divine breath," refers to these putative energies, which are assumed by TCM to permeate everything in the universe. With respect to biological organisms, Qi is rather like the concept of *elan vital,* a hypothetical "life force" that was abandoned in Western medicine when scientific discoveries made it apparent that there is no essential difference in chemical constituents or processes between living and inanimate matter.

TCM's advocates assert that herbs, moxibustion, massage, breathing exercises, acupuncture, and certain foods are able to restore the balance of the *Yin* and *Yang,* variants of Qi energy, which are supposed to flow in invisible channels in the body called "meridians." By balancing Qi in this way, they say, health is maintained or restored. Some of the means for achieving this balance can look rather strange to those accustomed to scientific medicine. Take, for instance, something widely sold in China, the "505 Magic Bag." It is "shaped like an apron and, containing 50 [herbal] ingredients, [it] can prevent and treat many diseases of the stomach and intestines . . . [when] the bag [is worn] close to the navel" (Hou 1991).[7]

Critics have pointed out that TCM relies, even today, on an ancient philosophical view of the body that was formulated during an era when the Chinese, for religious reasons, were forbidden to dissect cadavers. Thus the organ systems referred to in the ancient texts that still underlie TCM's practices are merely metaphors that bear little relationship to the anatomical systems revealed by Andreas Vesalius, William Harvey, and the other pioneers of scientific medicine.[8] Chinese medicine of 3,000 years ago was certainly no more primitive than the folk practices from the same era that evolved into Western medicine; but just as we no longer rely on the astronomy of ancient Greece, it would seem that progress in anatomy, physiology, pathology, and therapeutics has rendered most ancient medical practices obsolete. For those who would argue that antiquity implies validity, consider the longevity of racism, sexism, or the belief in a flat Earth.

Although TCM is based on a philosophical rather than empirical understanding of bodily function, it is possible that some of its procedures might still work, but for reasons unrelated to the magical belief system that supplied their rationale thousands of years ago (Xie 1995). Open-minded physicians everywhere would welcome any treatment that could benefit their patients, regardless of its origins—*providing it can demonstrate its value in properly controlled clinical trials.* It was in this spirit that we approached the fact-finding mission that took us to the foremost TCM facilities in the People's Republic.

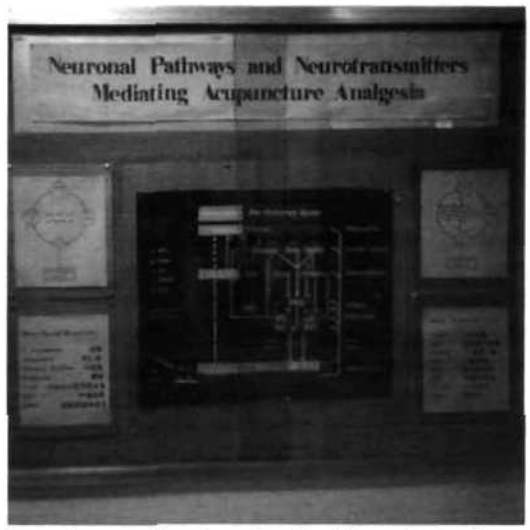
We had been aware for some time that Chinese Qigong masters were amassing considerable wealth and political power by allegedly healing people with mysterious force fields—supposedly "external" manifestations of their Qi "energy." Many masters subsequently immigrated to North America where they established even more lucrative healing ventures. Qigong masters were featured in Bill Moyers's highly acclaimed but embarrassingly credulous 1993 public television series, "Healing and the Mind." Appearing with Moyers on one segment was David Eisenberg, who enhanced his already high standing in the alternative medicine community by promoting the powers of the Qigong mentor, Master Shi. Moyers's demonstration made it appear that Shi, this elderly, frail man,

had the strength to resist vigorous shoving by his hearty young students, whereas he could apparently "push" them around from a distance with the invisible force of his external Qi. Our study of slow-motion replays led us to conclude that the student was not exerting any great muscular force on the master's body, but was only pretending to do so.[9] At one point, even the trusting Eisenberg is heard to shout, "Try harder. You look like you are faking it." In response to the master's movements, another student leaped backward, making it appear that the master's "energy" had repelled him without physical contact. Peter Huston, writing in the September/October 1995 SKEPTICAL INQUIRER ("China, Chi, and Chicanery") reached the same conclusion that we did from studying this performance. It looked like a well-rehearsed ballet. Various stage tricks passed off as miracles by Qigong masters have been repeatedly exposed by Chinese investigators, who were among our hosts during our tour of China (Lin et al., in press).

Eisenberg's 1982 book, *Encounters with Qi*, recounts the postgraduate training in TCM he received in China. In the book he describes many supposedly proven paranormal feats performed by Qigong masters.[10] Although he makes a few token proclamations of skepticism, Eisenberg seems curiously loath to ask the masters to recreate the effects he observed under conditions that would prevent the kind of stage tricks the demonstrations clearly resembled. In *Encounters with Qi*, he unquestioningly accepts the therapeutic benefits of balancing the body's (internal) Qi with herbs, acupuncture, and moxibustion (also an herbal treatment). When he returned to China with Moyers, Eisenberg continued to embrace the therapeutic effects of TCM as enthusiastically as he had back in his student days when he accepted as real the kind of "external Qi" effects others have exposed as magic tricks. Moyers seemed equally willing to credit the healing powers of Qi on the basis of nothing more than patient testimonials and the word of his guides. Eisenberg now directs alternative medicine courses for medical students and physicians through Harvard University. These courses and a 1993 article he coauthored on alternative medicine (Eisenberg et al. 1993) were funded by the Fetzer Institute, a $200 million endowment for the propagation of various unproven "mind/medicine" principles.

The effects shown on Moyers's program were said to be driven by "external Qi," the same doubtful force invoked to explain allegedly supernatural feats, (extraordinary functions of the human body) that the 1988 CSICOP delegation exposed as conjuring tricks. Although the delegation found this "force" dismally inaccurate when the Qigong masters invoked it to diagnose illnesses, it is the same "energy" that TCM advocates say runs through acupuncture meridians to effect healing. It has always struck us as odd that proponents can accept that this mysterious energy is unable to interact with the physical matter in the sensors of measuring instruments (which could confirm its existence) while it is still able to interact with the physical matter of bodily organs to "read" their state of health and produce a cure.

It was against this background of mysticism, naive trust in testimonials, prior incidents of fakery, and a host of intertwined political and ideological considerations that we set out to look into TCM's claims ourselves. We wanted to see if Qigong and other TCM practices were as fully integrated with scientific medicine in the Chinese health care system as proponents on this continent assert.[11] We had hoped to observe herbal prescribing, traditional pulse and tongue diagnoses, cupping, moxibustion, "back scraping," and the use of acupuncture for anesthesia, analgesia, and treatment of organic disorders. Some of these we saw and others we did not, since our hosts in the TCM institutions selected our itineraries for reasons steeped in philosophy, politics, and courtesy.



Research poster, laboratory of Dr. Han Jisheng, Neuroscience Research Center, Beijing Medical Center. The poster depicts biochemical effects of acupuncture discovered in Han's laboratory. (Photo: Barry Beyerstein)

Our Visit

Beijing: June 1995. While we were in Beijing, we enjoyed the superb hospitality of Madam Shen Zhenyu of CAST (the principal organizer), Mr. Lin Zixin (former editor of *Science and Technology Daily* and a CSICOP Fellow), Madam Shen Zhen-xin (of the Academia Sinia), and Mr. Bai Tongdong, a graduate student at Beijing University.

While touring the Forbidden City with us, Mr. Bai, a physicist and graduate student in the philosophy of science, set the tone for our later discussions with his assertion that Qi is a philosophy, not a reflection of physical reality. In his view, the principles of TCM, including Qi, are merely useful, socially determined metaphors for the realities and facts that only science can provide. He did not offer opinions on the validity of traditional Chinese medicine.

The morning of our first full day, we were taken to a major hospital and research institute at Beijing Medical University. There we were greeted by Professor Han Jishen, a world-famous neurophysiologist, and several other distinguished faculty members. Dr. Han proceeded to chair a seminar that included descriptions of the institute, its achievements in both Western and traditional Chinese medicine, and discussion among ourselves and the assembled faculty.

One of the speakers was Dr. Xie Zhu-fan, director of the Institute of Integration of Traditional Chinese Medicine and

Western Medicine. In his presentation he outlined three historical phases in the resurgence of TCM in China. Dr. Xie did not mention the political contributions to this renaissance, merely saying that in the early 1950s TCM began to be taught after decades of neglect and that some Western-trained Chinese physicians had been released from their duties to study TCM. After this, he said, there followed a period devoted to documenting the clinical effects of TCM. Dr. Xie admitted, as he does in his recent book (Xie 1995), that TCM philosophy is not compatible with modern science; but that acupuncture and some other traditional techniques have been demonstrated clinically to have analgesic properties or positive effects on certain functional disorders.

According to Dr. Xie, the Chinese are now in the third phase, the investigation of mechanisms that could account for TCM's clinical effects. For example, he said they had confirmed the ability of certain Chinese herbs to dilate blood vessels, decrease platelet activity (inhibit blood clotting), and "modulate immune responses." Because of the multiple actions of herbs, each could be used for several different disorders. Dr. Xie did not explain how these effects had been determined: whether the mixtures raised or lowered blood pressure and just how "immune system modulation" (we're not sure exactly what he meant by this term) benefits the patient. There was no discussion of side effects. Here, and during our discussions with other TCM physicians, it seemed axiomatic that when herbal medications are ingested, only desirable outcomes follow.[12]

A ward at the China Academy of Traditional Chinese Medicine in Beijing. Patient is being treated for a gastrointestinal problem using a process called moxibustion. The wooden box contains smoldering herbs on a meshwork bottom that is in contact with the skin of the patient's abdomen. (Photo: Barry Beyerstein)

After the opening seminar, we were taken on a tour of Professor Han's laboratory. Dr. Han heads an institute with a staff of thirty-seven that occupies three floors of one campus building. His support comes primarily from governmental grants, there being few, if any, independent sources of funding in China. Dr. Han also has grants from the National Institute on Drug Abuse in the U.S. and Upsa Laboratories, a French pharmaceutical company. We met several of his collaborators, whom we observed in their labs. Although the lab appointments were simple, they were serviceable. The hallways were dimly lit by single, sparsely distributed fluorescent lamps, electricity apparently being expensive. Much of the lab's equipment had been donated by an admirer of Dr. Han's, the distinguished opiate researcher, Avram Goldstein, who shipped his furnishings and apparatus to Beijing after retiring from Stanford University. The institute's walls were decorated with poster presentations from research meetings that described the lab's discoveries. Professor Han spent two more hours with us, touring the lab and summarizing the work of his group on the physiology and neurochemistry of acupuncture. Our interest was to see whether the cellular effects of acupuncture found in the animal experiments could legitimately account for the myriad clinical effects in human patients claimed by practicing acupuncturists.

A detailed account of Dr. Han's research is beyond the scope of this article, but we can summarize some of his work, which has been widely published and presented at international conferences (e.g., Chen et al. 1994). Dr. Han showed, before the discovery of the enkephalins (the brain's endogenous morphinelike neurotransmitters), that acupuncture caused a reduction in pain responses in rabbits and that transfusing a treated animal's cerebrospinal fluid into a nontreated animal produced a similar effect in the second rabbit. It was suggested that acupuncture had elevated the pain threshold by triggering a release of a transmissible agent (later identified as the opioid peptides, enkephalin and endorphin). Dr. Han later showed, by using antisense DNA in the system, that the ability of acupuncture to produce analgesia [lowered sensitivity to pain while conscious] can be prevented by blocking the expression of the endorphin receptor on the surface of spinal neurons. Others have shown that endorphin-blocking drugs also reverse acupuncture analgesia.

More recently, Dr. Han's group has shown that the peptide neurotransmitter cholecystokinin (CCK—receptors for which are believed to be distributed in close proximity to those for the endorphins) antagonizes the endorphin-related effects of acupuncture. It seems to do so by altering the endorphin receptor's affinity for its transmitter, or its ability to conduct messages inside the cell. Dr. Han thinks that natural hyperactivity of the CCK system in about 10 to 20 percent of the human population is responsible for the finding that a similar percentage of normal people is totally "nonresponsive" to acupuncture. He said he belongs to that group of nonresponders.

Our visit was too short to assess the adequacy of the methodology or the validity of these studies, although they seemed sound and have been published in peer-reviewed journals. Nonetheless, we felt that although this research is important basic science, it does not bear directly on many of the clinical claims made by acupuncturists. For instance, a rise in endorphin levels has been attributed to a number of varied activities—running, meditating, etc.—so Dr. Han's findings are not necessarily uniquely caused by acupuncture. The demonstration of an agent's effect in an animal model does not automatically imply its reproducibility, specificity, or significance in clinical practice.

Dr. Han maintained that, in humans, the acupuncture

point between the thumb and forefinger is specific for the results he measured; but others have found that the exact placement of the needles is unrelated to the pain relief or other clinical effects obtained (Richardson and Vincent 1986). In addition, other researchers have failed to reproduce the reversal of acupuncture analgesia by the morphine antagonist naloxone, so the conditions under which measurements are made may be important, and the optimal ones are not yet known. It should also be noted that the role of the endorphins in pain relief remains controversial because plasma endorphin concentrations are not consistently related to levels of pain experienced by humans (Skrabanek 1985). And finally, a transient rise in endorphin levels could not reasonably account for the prolonged pain relief claimed by acupuncturists, nor other avowed cures in organ systems that are unaffected by the endorphins.

Dr. Han has also developed a low-voltage electric stimulator for administration of electroacupuncture, which he favors for both research and therapy. Known as the "HAN ... S," we found it used throughout China by those who prefer to deliver brief electric pulses through acupuncture needles rather than merely twirling the needles in the traditional manner. It resembles the TENS transcutaneous stimulators widely used in Western pain clinics.

Group photo at the Forbidden City in Beijing. *From left to right:* Bai Tongdong, Andrew Skolnick, Shen Zhenyu, Wallace Sampson, Barry Beyerstein.

Dr. Han was most gracious to us, and he is obviously a leader in his field. At the end of our tour, we wondered if he would agree, as we had read, that a number of other, less invasive stimuli can also raise endorphin levels in the central nervous system. We asked if it were not true, as Dr. Victor Herbert had shown,[13] that any irritative stimulus, such as a pinch, might produce a similar rise in endorphin levels (this is conceded by many acupuncturists who use "acupressure" where the skin points are simply massaged rather than needled). He replied that yes, that is so, but acupuncture does not hurt as much as a pinch. We wondered at this juncture why pinch controls are not routinely included in acupuncture experiments and how one could justify clinical use of an invasive method (needling) known to be capable of producing serious complications to obtain such modest, inconsistent results. We, like Skrabanek (1985), also wondered whether suggestion and placebo effects had really been ruled out by acupuncture researchers as a more parsimonious explanation for observed clinical effects in humans. The argument that acupuncture's effectiveness in animals eliminates the placebo explanation ignores the fact that the immobilization necessary to insert the needles in animal subjects has been shown to produce a sort of catatonia/analgesia by itself.[14] At the very least, we went away wondering why, back home, a special "profession" now needs to be created to administer this procedure, so little about it having been satisfactorily proved.

We next visited several clinics at the China Academy of Traditional Chinese Medicine in Beijing. The main one was a moderate-sized room, approximately 12 by 4 meters, crowded with ten or twelve patients being treated—most with acupuncture, several with acupuncture and moxibustion, and two with cupping, as described below. The acupuncturist deftly twirled the needles in the prescribed points, leaving them in place for twenty to thirty minutes. Some patients received electroacupuncture, others the traditional method. Moxibustion, the placement of burning herbs on the surface of the body, is like the process of "blistering" common in prescientific Western medicine. Here it was administered by placing the smoldering material in a wooden box with a porous, recessed bottom that was placed on the diseased body part—in these cases, the back or the stomach. This was difficult for us to understand because we could not see how any active ingredients the burning herbs might contain could be absorbed in therapeutic quantities, and we had read previously that, for moxibustion to be effective, the herbs must be twisted into small cones and burned precisely over the appropriate acupuncture points. Moreover, the same herbal mixture seemed to be used indiscriminately for a variety of quite different complaints.

For cupping, heated clear glass vessels were placed on the upper back and shoulders, on presumed meridians or acupuncture points. As the cups cooled, skin was sucked up, much as with a vacuum cleaner. The rationale given was that the suction draws out bad or diseased energy from the body. An identical practice survived from ancient times until surprisingly recently in Western medicine as well—to draw out diseased "humors" or "vapors" that are no longer believed to exist.

While touring the TCM complex, we made several observations. The total space in this institution devoted to the practice of TCM was a relatively small portion of its holdings. The rest of the complex of several large buildings was apparently devoted to more mainstream scientific research. We asked what portion of the total medical services delivered in China was TCM, and how people were chosen to receive TCM treatments. We received some surprising answers: Patients generally request TCM treatments themselves, rather than being referred to TCM practitioners by biomedically trained physicians. Most scientifically trained doctors do not practice TCM, nor do they decide on the mode of treatment if they should refer a patient for TCM.

TCM is practiced at the institute by specialists trained in their respective techniques. We were told that most TCM stu-

dents receive little scientific medical education and, overall, scientifically trained physicians seemed to have little interaction with TCM practitioners. Some physicians from abroad were studying at the institute, but most of the foreign students we met were physiotherapists, health food entrepreneurs, naturopaths, or other alternative medicine practitioners. By 1991 more than 2,000 foreign students had graduated from the thirty TCM colleges in China. At any given time, there are typically 30,000 Chinese students studying TCM (Hou 1991).

We were told that, these days, the proportion of Chinese patients choosing TCM, nationwide, is only about 15 to 20 percent, a figure that surprised us, but was consistent with the relatively small area allotted to these practices in the institute we visited in Beijing. Government publications as recent as 1991 had put the usage rate for TCM at about one-third of all patients in the country (Hou 1991). The 15 to 20 percent estimate was later reiterated by other informants who practiced TCM in Shanghai. Most TCM patients we observed were being treated for chronic problems such as indigestion, back pain, arthritis, and bursitis, which was not surprising to us. Conditions such as these often respond well to reassurance and psychological interventions and they tend to be cyclical, so virtually any treatment is likely to coincide with relief at some time. This is why placebo controls are essential in evaluating all putative therapies.

We were surprised at the low levels of personal interaction between TCM therapists and their patients. The warm, individualized attention and extended time spent with patients (a distinguishing feature of TCM according to its advocates in North America) was not evident here. Most patients arrived at the Beijing clinic with diagnoses in hand. The treatments we saw seemed to be largely symptom oriented, contrary to claims of supporters in North America who see as one of TCM's superiorities that it "treats the whole person." There was no attempt, in our presence anyway, to diagnose with TCM methods (e.g., by reading the fifteen unique pulses traditional healers say they can discern, or the more than 100 different diagnostic signs on the tongue [see Wallnöfer and von Rottauscher 1975]). Diagnoses for the patients we saw had generally been made by biomedical physicians, and the patients had elected to receive TCM in addition to their Western treatments. We were not shown acupuncture anesthesia for surgery, this apparently having fallen out of favor with scientifically trained surgeons. Dr. Han, for instance, had been emphatic that he and his colleagues see acupuncture only as an analgesic (pain reducer), not an anesthetic (an agent that blocks all conscious sensations).

Before leaving the Beijing Institute, we were shown the largest collection of references on TCM, especially herbalism, in China. We entered through a long reading room with rows of display cases and tables. Another room branched from the side and at the end was a large vault, temperature- and humidity-controlled, containing stacks of rare, ancient volumes. Splendidly bound, they dated back many hundreds of years, some much more, and contained beautiful illustrations of medicinal plants. TCM recognizes more than 8,000 plant species as having medicinal value. Students come from all over China to study these tomes, although we saw only a few while we were there. On another floor we were shown a major project funded by the UN's World Health Organization to establish a computer database from this storehouse of information about TCM.

Interspersed with our packed itinerary of official visits, we were shown the sights of Beijing including the Forbidden City, the Summer Palace, and several museums; and we trekked along the Great Wall. Everywhere we went, our hosts pampered and fed us in grand style. Our questions were answered frankly and we were always made to feel most welcome. In Part 2 of this report [to be published in a future issue of *SI*], we shall describe the major scholarly conference CAST arranged to coincide with our visit, and our further explorations of TCM in Shanghai.

Notes

1. "Qi" is the name Chinese philosophy gives to a scientifically undetectable force or energy that is supposed to permeate all things. Believers in TCM assert that imbalances in the flow of Qi are responsible for disease, fatigue, etc. Acupuncture, Chinese herbs, 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 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 sort of discipline call it "internal Qigong" to distinguish it from so-called "external Qigong," which has enjoyed a dramatic rise in popularity in China and the West. Devotees of external Qigong claim they can control the Qi force outside their bodies to debilitate their foes, achieve the sorts of psychic feats familiar to Westerners, as well as to 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. Moxibustion employs various herbal materials but instead of being eaten, they are twisted into small cones and set on fire. The cones are placed over hypothetical "meridians" that are supposed to supply "Qi energy" to the afflicted part of the body. There they smolder, much like lit tobacco leaves. Although this is the traditional procedure, in the clinics we observed it had mostly been replaced by one in which a wire-bottomed box containing the smoldering herbs was simply placed over the site of the patient's complaint.

3. We should note, as Skrabanek (1985) points out, that TCM has been banned several times in Chinese history as useless, only later to be reinstated by official fiat. Mao's resurrection of TCM rescinded the 1929 ban instituted by the Kuomintang government, which had opted for scientific medicine over folk practices but did a very poor job of delivering it to the masses.

4. Western physicians have long been aware that suitably selected patients can undergo major surgery without anesthesia and show astonishingly little evidence of suffering if given hypnotic inductions or any of a host of other, related cognitive/social manipulations (see Melzack and Wall 1982, or Skrabanek 1985). Modern psychological research has shown that pain is partly a sensation and partly an emotional reaction (the "agony component"). Any manipulation of attention, anxiety, or arousal that attenuates the emotional component leaves the purely sensory aspect of pain surprisingly tolerable.

5. Many mainstays of modern pharmacology have their origins in traditional folk remedies (Lewis and Elvin-Lewis 1977). Traditional Chinese herbalism has already provided scientific medicine with valuable medications such as ephedrine (from the plant Chinese herbalists call "Ma Huang"). Undoubtedly, many other useful medicines remain to be isolated from the huge traditional pharmacopeia.

Unfortunately, as it stands, most traditional herbs have not yet been properly tested for safety or efficacy. Thus, herbalism remains an inseparable mixture of some safe and effective remedies, some inert placebos, and some dangerous substances. It is difficult, if not impossible, in most instances, to tell which concoctions belong in which of these categories. The encouraging news is that, particularly in China, there are increasing numbers of attempts to apply scientific methods to separate the effective herbal medications from the placebos and to isolate the active ingredients in those that actually work.

Firmly in the pseudoscience camp must be placed all traditional remedies made from rhinoceros horns, tiger penises, bear gall bladders and other parts of magnificent, endangered species. Lucrative poaching to harvest these body parts is seriously threatening these animals with extinction. And all this for useless treatments based solely on principles of sympathetic magic; i.e., the ancient belief that "like begets like." These are symbolically potent parts of powerful beasts, so it is believed that such organs must therefore magically transfer to the people who take them the vitality and fortitude of their donors.

6. The newly appointed director of the Office of Alternative Medicine, Joe Jacobs, soon ran afoul of the wishes of the alternative medicine community and resigned his post (Marshall 1994). Jacobs exhibited a rare and commendable mixture of willingness to entertain unconventional hypotheses and a hardheaded demand for rigorous tests before accepting them. Alternative practitioners had long contended that the only reason their treatments had not proven their worth scientifically was that the hidebound medical establishment had prevented them from receiving the necessary research funds. When Congress suddenly made grants available through the new institute, most proponents of alternative medicine proved that they didn't know how to conduct proper clinical trials and didn't really want them anyway. When they increased their demands that most of the money be turned over to them, without proper peer review, to continue gathering the scientifically useless testimonials they had always relied upon, Jacobs quit rather than perpetrate a charade. He called their demands "professionally insulting."

7. This exemplifies another aspect of sympathetic magic in TCM. Believers in "contact magic," say that things that are in physical proximity can influence each other by passing a mystical "vital essence," merely by being in the same vicinity. This is why psychics believe they can tell things about absent owners of objects they are allowed to hold—the owners' essence supposedly transferred to the object and then into the psychic, by contact.

8. For instance, no reputable scientist has ever found an anatomical basis in the circulatory, nervous, or lymphatic systems for the "meridians" through which the health-enhancing vital energies posited by TCM are supposed to flow. The energies themselves cannot be detected by conventional scientific instruments. Likewise, doubts have been raised because of the ways in which TCM remedies, such as moxibustion, are administered—it must be claimed that they interact with their target organs by some sort of dubious "vibrations" or "sympathy" because our modern understanding of the body's integument and membrane properties rules out their absorbtion by and distribution to target organs by any of the conventionally accepted routes. For instance, take this description of a TCM product promoted by an official Chinese government publication: "Yuwang-Brand Superior Weight-Reducing Bathing Liquid is made from medicinal herb extracts mixed with high quality detergent. It cleans the skin and promotes fat metabolism, helping to reduce weight and keep the figure slim" (Hou 1991, p. 33).

9. Whether this disciple was in fact "pulling his punches" intentionally to make his master look good, or was psychologically deluding himself that he was actually applying massive force when he was not, remains a matter of conjecture. What is known is that strong believers are capable of "ideomotor actions" (or *in*actions) where they honestly believe their movements (such as with a Ouija board or a dowsing rod) are not being initiated and controlled by their own volition (Vogt and Hyman 1979). Similarly, there is evidence that people can sincerely convince themselves they are exerting muscular effort when in fact they are not. Various hypnotic phenomena are of this sort.

10. In a similar vein, Barry Beyerstein, when he lived in China several years ago, was told by the staff at his residence that they knew a Qigong master who could leap over buildings. Of course, they said, the skeptical foreigner could have a demonstration. Unfortunately, for some reason, the time was never quite right. When he returned to Canada, Beyerstein organzed a lecture by a famous Qigong master, Ge, who had relocated to Vancouver. Ge promised to demonstrate the power of his Qi by making distilled water taste sweet. Once again, the audience was greatly disappointed when, after a rambling, incoherent lecture, the master announced he was now too tired to do the double-blind, forced-choice test Beyerstein had prepared. Ge's claim that he could diagnose diseased organs by passing his hands over the surface of a patient's body and feeling a twinge in the same organ in his own body was met with a question from the floor: "And just how do you detect ovarian cancer?"

11. It was the conclusion of Barry Beyerstein, after touring several treatment facilities outside the largest Chinese cities six years ago, that the much-publicized "complete integration" of traditional and scientific practitioners was not as happy a marriage as it had been portrayed. Back then, scientifically trained Chinese doctors were more circumspect in expressing their doubts about official encouragements of TCM, but many of them expressed their reservations quietly to the visitor nonetheless. On this more recent visit most scientific critics were bolder, but still cautious.

12. This belief that if something is "organic" or "natural" it must be milder, safer, and more benign than "manufactured" drugs is a common misconception among most practitioners of herbal medicine. A moment's reflection will reveal that strychnine, "deadly nightshade" (belladonna), and a variety of mushrooms are among nature's most dangerous poisons. Many herbal remedies are of questionable safety, let alone efficacy (Tyler 1985).

13. In a personal communication, Herbert presented the following account of a demonstration of animal acupuncture he had observed in China. The experimenter inserted needles into the animal subject and took a blood sample that showed a rise in endorphin levels. Herbert asked if he could try pinching the skin to see if it would have a similar effect on endorphin levels to that of the needles. It did.

14. Known in the older literature as "animal hypnosis," grabbing and rapidly turning over small mammals can produce a stunned immobility, a protective freezing response, in which they appear to be insensitive to painful stimuli.

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