

(Im-)Potent Knowledges. Preserving ‘Traditional’ Tibetan Medicine Through Modern Science¹

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When we lose the potency of tradition, then we need the help of modernity.
Dr. Tenzin Thaye, September 19, 2008, Dharamsala

Tibet is widely associated with the tragic story of occupation, exile, and loss that began with Mao’s invasion of Eastern Tibet in 1950, culminated with the Dalai Lama’s flight to India and the violent reforms of the Cultural Revolution, and continues today amid media reports on human rights abuses, self-immolations, and rapid modernization in Tibet.² In many ways, Tibet’s fate is one seen all too often in world history. What makes it stand out, however, is the Dalai Lama’s successful portrayal of Tibetan culture as a rich repository of knowledge holding unique relevance for the contemporary world (see e.g., Dalai Lama, *Ancient Wisdom*). This characterization, and the related concern with cultural survival, taps into a more general, global modernist narrative (Adams, *Particularizing Modernity* 222) that assigns ‘traditional’ knowledge a precarious status of weakness, defined by the specter of imminent loss and the imperative for preservation. Two kinds of knowledge in particular function as central identifiers of Tibetan culture: the spiritual-philosophical knowledge of Tibetan Buddhism, and the medical-pharmaceutical knowledge of Tibetan medicine, also known as *Sowa Rigpa* (*gso ba rig pa*: the science of healing). This essay will explore Tibetan efforts to

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- 2 See Powers for a good collection of references on both the Chinese and exile Tibetan positions.

engage with modern science in order to ‘preserve’ Tibetan medicine in a context of exile, modernity, and a capitalist economy.

Tibetan (Medical) Knowledge in Exile

Together with Buddhism, Tibetan medicine came under direct attack by Mao’s armed troops during the 1950s, especially after the failed Lhasa uprising in March 1959, when China forcibly annexed Tibet and implemented radical Communist reforms. The most prestigious Tibetan medical institution until then – the Chagpori Drophen Ling in Lhasa – was bombed and leveled, as were most other medical and monastic establishments during the following decade. Similarly, innumerable medical and religious scriptures were destroyed, and large numbers of doctors and monks were killed and imprisoned. In the words of one medical anthropologist and historian, “by 1973 Tibetan medicine as an institution had virtually disappeared” in Tibet (Janes, “Transformations” 20). Meanwhile, the Dalai Lama and some eighty thousand Tibetans had fled across the Himalayas to India – a passage that proved to be a veritable bottleneck through which only a fraction of Tibet’s medical knowledge, in the form of a handful of doctors and whatever texts they managed to carry, passed into exile. Both in Tibet and in exile, Tibetan medicine was therefore confronted with an unprecedented loss of knowledge held by experts, texts, training facilities, institutional structures, and the very plurality of local experience. Tibetan medical knowledge thus became fugitive in a geographical, political, and epistemological sense, and was reinscribed in a register of cultural loss and preservation.

This was an entirely new situation for Tibetan medicine, which – like Buddhism – constituted not only one of Tibet’s five major sciences, enjoying a high level of prestige and social status, but also served as a hegemonic institution through which the Central Tibetan state had pursued its political agenda (Schaeffer; Garrett). As such, it had been well organized through a network of powerful medical centers, a large and complex canon of authoritative texts, and a lively tradition of scholarship and debate. Until 1959, Tibetan medicine enjoyed a quasi monopoly on professional, pharmaceutical-based healthcare in Tibet, was widely known beyond Tibet’s borders for its efficacy and sophistication, and attracted both students and high-ranking patients from throughout Central Asia. In short, Tibetan medicine and Buddhism strongly informed Tibet’s cultural and political identity as a powerful civilization, with its systematic destruction by the Chinese striking a serious blow against the Tibetan nation.

From the very beginning, the Dalai Lama and his government-in-exile thus framed the loss of religious and medical knowledge within a discourse of cultural survival. This discourse found resonance not only in the international sphere (see Lopez; Dodin/Räther) but also among the Tibetan exile community, which began to focus its efforts – individual, institutional, and policy – on the preservation of

what it considered ‘Tibetan culture’, that is, a national identity revolving around the Mahayana Buddhist ethics of altruism and compassion (see Kloos, *Tibetan Medicine*). This was particularly true for Tibetan medicine, which found itself responsible for ensuring not only the physical survival of sick Tibetan refugees, but also the cultural survival of the Tibetan nation. Tibetan medicine, owing to this crucial dual role and traditional status as one of Tibet’s major sciences, soon came to be seen as a prime symbol and placeholder of the Tibetan culture it was meant to preserve. The preservation and potential loss of its own medical knowledge was thus crucial to – and to some extent even synonymous with – the preservation and loss of Tibetan ethics and culture at large, and consequently became the central and defining purpose of Tibetan medicine in exile.

In the 1960s, it had already become clear to the Dalai Lama that an engagement with modern science was key to the preservation of both Tibetan medicine and culture. Thus, in his speeches on the topic of Tibetan medicine from 1969 up to the present (compiled in Dalai Lama, *Srid zhi’i*), he has consistently exhorted its practitioners – also known as *amchi* – to “combine Western and Tibetan medicine,” to be “broad minded” (1978) and “compliant with modern times and current practices” (1982), to “seek the expertise and advice of modern medical science” (1987), “to tread the path of science” (1994), to “make innovative discoveries” (1995), “to research and evaluate Tibetan medicine through the prism of modern science” (1998), to “take the best bits of Western medical practices and create a fine blend” (2000), and to learn how “to explain Tibetan medicine in terms of Western medicine” (2006). Given the difficulties involved in reestablishing Tibetan medicine from scratch during the first decades in exile, it was not until the 1980s that its premier institution, the Dharamsala-based Men-Tsee-Khang, was in a position to heed the Dalai Lama’s advice. Even then, the task of conducting research was daunting for the Men-Tsee-Khang, whose doctors and staff lacked even the most rudimentary scientific training, and openly questioned the necessity of ‘proving’ their medicine by modern means.

Today, the exile Tibetan *amchi*’s perception of modern science has changed dramatically: modern science is – however reluctantly in some quarters – regarded as playing an essential role in the ‘preservation’ of Tibetan medicine and its knowledge. While the Men-Tsee-Khang occupies a leadership position in this regard – due mostly to its superior human and financial resources and its direct affiliation with the Dalai Lama – this perception is shared by virtually all practitioners of Tibetan medicine in South Asia and the West today, regardless of their institutional affiliation.³ As one doctor told me, “It’s about the survival of Tibetan

3 There are four official Tibetan medical institutions operating in exile today, all of them located in North India: the Men-Tsee-Khang in Dharamsala, the medical faculty at the Central University for Tibetan Studies (CUTS) in Sarnath, the Chagpori Tibetan Medical Institute in Darjeeling, and the medical faculty at the Central Institute for Buddhist Studies in Choglamsar, Ladakh. So far, other than the Men-Tsee-Khang, only the medical faculty at CUTS has conducted small-scale clinical research. This is also the reason for the heavy reliance on interviews with Men-Tsee-Khang doctors in this essay. However, there are also

medicine in an age of science and skepticism. If we don't prove Tibetan medicine scientifically, people – even Tibetans – will stop taking it, and this great treasure of knowledge will get lost" (Dr. Tseten Mingyur, June 25, 2006, Dharamsala).⁴ Another doctor added: "We don't have any doubts about our medicines. But nowadays, people are very intelligent. They want proof, documentation; they need paper!" (Dr. Jamyang Tashi, July 18, 2005, Kalimpong). What modern science could provide, then, was the gift of visibility, which could make Tibetan medicine not only acceptable and 'legible' (see Scott 9–83), but even attractive to those who needed proof in order to consider something scientifically valid. This, in turn, made modern science attractive to Tibetan amchi, who hoped to learn the art of making their knowledge, ethics, and culture appreciable by the world. In the words of Dr. Tenzin Nyima: "Modern science is like an ornament for traditional knowledge" (September 3, 2008, Dharamsala).

Consider this: dislocated from its usual position of superiority to a place within the Tibetans' own Buddhist epistemic framework, modern science is reinterpreted as an ornament (*rgyan*) to enhance the outward appearance of Tibetan knowledge without changing its inner substance; as a tool to instill faith in non-believers and thereby achieve international recognition, ensuring the long-term survival of Tibetan medicine. This is a far cry from science's own self-definition as a rational arbiter of truth vis-à-vis supposedly irrational phenomena like spirituality, faith, or belief. It is, however, completely in line with the amchi's overall goal of enlisting modernity in order to translate and incorporate it into the framework of their own postcolonial national culture. Stated in medical terms, in order to cure Tibetan medicine and culture, which were simultaneously threatened by modernity and suffered from a lack thereof, they transformed the potent but dangerous substance of modern science into an 'elixir of health and rejuvenation'.

Modern science here is clearly associated with modernity and Tibetan medicine with tradition. But in contrast to modern science's hegemonic discourse that monopolizes truth and dismisses 'traditional' forms of knowledge as mere 'beliefs' (Good; Pigg), exile Tibetan amchi see their medical tradition as an alternative science that is at least as valid – and valuable – as modernity's science. Regarding the two kinds of knowledge – traditional and modern – not as necessarily conflicting opposites but as mutually complementary sciences, amchi aim to engage with modernity on their own, Tibetan, terms. These involve 'taming' or 'subduing' the Other in order to incorporate it into a Tibetan (Buddhist) epistemic framework and use it for the Tibetans' purposes, as in the well-established Tibetan Buddhist figure of the ornament. While acknowledging the importance of engaging with modern science, most exile Tibetan amchi are convinced that this is first and foremost a political rather than a scientific requirement. As Dr. Tenzin

individual Tibetan *amchi* and experts who have been centrally involved in modern research on Tibetan medicine (see, e.g., Aschoff/Tashigang; Choedon et al.) – not counting the larger field of textual and literary research.

4 All interviews excerpted in this essay were conducted by the author.

Namdul from the Men-Tsee-Khang's Clinical Research Department said in a lecture on the topic (April 19, 2008, Dharamsala):

When we go to conferences and so on, we always encounter a lot of skepticism and doubt about Tibetan medicine: "How can you guys say that Tibetan medicine can be effective for diabetes or cancer?" At the end of the day, the big question is always whether we have done any scientific clinical studies, whether our medical system has been recognized by any government. [...] One thing I always try to tell these people – even our own doctors and students here – is that we need to look back in history. Tibetan medicine has made important advances through research and development. So we actually need to have a bit more confidence and realize that we already have the foundation.

If you look into the texts, the compounding of medicines, the practice, everything: without in-depth research in early times we would not have what we are seeing now. So they have done research. Today the big challenge for us is to do research that employs the Western scientific system. This is difficult, and in a way it's improper to try to insert the Western scientific approach into Tibetan medicine. So we need to see how we can do it, making sure that we keep the Tibetan medical tradition intact but are also able to do evidence-based research studies.

Indeed, Tibetan doctors in exile have been involved in a number of clinical studies, especially since the late 1990s. For example, between the late 1980s and 2010, the Men-Tsee-Khang's Clinical Research Department conducted ten clinical and three laboratory-based studies, including studies on cancer, diabetes, rheumatoid arthritis, and hypertension. Not only Tibetan amchi, but also Western scholars interested in the encounter between Tibetan medicine and modern science have focused mostly on such clinical studies, especially in the Tibetan Autonomous Region (TAR) and adjacent areas in China (see the works by Adams; Janes; and Craig). In this essay, however, I will shift the focus both geographically, to the underexplored context of Tibetan medicine in exile (that is, to India), and thematically, away from clinical trials to a much more fundamental aspect of Tibetan medicine's encounter with modern science: modern quality control. Hardly discussed and barely apparent to anyone but the most involved amchi, this effort to ensure, through modern means, a certain level and standard of quality and efficacy in the production of Tibetan medicines does not fit the ornament metaphor, but rather that of a silent revolution. As Tsewang Gyatso, a biologist who worked at the Men-Tsee-Khang's Materia Medica department until 2009, told me, "Actually, although everybody talks of research, our priority is the quality control of the medicines and raw materials" (December 31, 2007, Dharamsala).

Quality Control and the Problem of Efficacy

In 1997, the Men-Tsee-Khang initiated a clinical trial on diabetes mellitus in cooperation with the All India Institute for Medical Sciences (AIIMS) in New Delhi, one of India's most prestigious medical institutions. This clinical trial was a breakthrough for the Men-Tsee-Khang in several ways: it was the first study yielding results that were not only promising but also statistically conclusive enough to be published as a letter of observation in the American Diabetes Association's journal *Diabetes Care* (see Namdul et al.). It also strengthened the Men-Tsee-Khang's relations with the AIIMS, whose doctors were enthusiastic about the results, and marked the beginning of modern quality control and efforts to standardize Tibetan medicines. While the study's success resulted in administrative limits on Tibetan medicine's engagement with science,⁵ its shortcomings unexpectedly set in motion a process that would change Tibetan medicine more profoundly than clinical studies ever could. For the main problem that arose during the diabetes study was not one of research design or statistical validity – issues that had failed to attract the Men-Tsee-Khang administration's attention before – but one that concerned Tibetan medicine's efficacy. During the study, patients who initially responded well to the Tibetan pills complained that suddenly the same drug did not seem to work anymore. The amchi's traditional diagnoses using data derived from pulse diagnosis, urine analysis, and patient interviews concurred with these complaints, and were confirmed by the same biomedical tests that had previously demonstrated the Tibetan pills' efficacy. For the first time, Men-Tsee-Khang doctors were confronted with hard evidence that the efficacy of their medicines varied from batch to batch. It became clear that the standardization of their medicines was imperative, both for the sake of future clinical trials and out of responsibility toward their patients.

What should we think of this? Has the efficacy of Tibetan medicine always been unpredictable, has it always lacked adequate procedures of standardization and quality control, deficiencies that have only now come to light thanks to pharmaceutical mass production and modern science? To some extent, perhaps. It is true that traditionally there was no such thing as 'quality control' in the sense of a single, clearly defined process, although amchi can and do check their medicines' quality and efficacy by taste, sight, smell, and patient diagnosis. Rather, the quality of Tibetan medicine depended on the amchi's ethics – one could say, their character and motivation – which translated into how diligently they followed the prescribed methods of identifying, collecting, drying, cleaning, stor-

5 The Men-Tsee-Khang's administration at the time failed to understand the scientific results of the study and was unprepared for the enthusiasm these results created among the involved Indian biomedical researchers. According to one informant, the consequent decision to block any follow-up studies reflected the general fear of cultural dispossession and suspicions against 'overly interested' foreigners then prevalent among sections of the Tibetan exile society.

ing, and compounding their ingredients. These methods are clearly explained in classical Tibetan medical texts, such as the seventeenth-century *Shel gong shel phreng* by Deumar Geshe Tenzin Phuntsog (Deumar; see also Ridrag, and Men-Tsee-Khang), which also describe eight types of potency (*nus pa*) and their characteristics. Far from being confined to the mere examination of ingredients by taste, sight, and smell, this kind of ‘quality control’ thus formed the fundamental basis – and provided clear standards – for Tibetan pharmaceutical production. In the words of Dr. Tsewang Tamdin who at different times headed the Men-Tsee-Khang’s pharmaceutical department, college, and the entire institute as its director: “You could say that being ethical, being Buddhist, is the best quality control” (May 27, 2008, Dharamsala).

Certainly, these traditional methods of standardization and quality control never were – or needed to be – as accurate as modern technologies promise to be. But there is no doubt that they worked well enough for Tibetan medicine to become renowned in large parts of Asia during the past centuries and, lately, around the world. There is also no doubt that even today, the Men-Tsee-Khang takes its traditional methods of standardization, as well as its Buddhist ethical ideals and practices with regard to medicine production, extremely seriously. If neither the traditional methods of quality control and standardization *per se*, nor their lack of implementation could be blamed for the fluctuating results of the pills prescribed by Men-Tsee-Khang practitioners, then what was the problem? And why did the Men-Tsee-Khang end up embracing modern quality control?

To begin to answer these questions, it is necessary to consider the importance of modernity for nationalist struggles like that of Tibet. As mentioned above, Tibetan medicine’s main purpose in exile was not so much to cure individual patients – although that was what it did on a day-to-day basis – but rather to heal an ailing Tibetan culture and nation. However, if Tibetan medicine in fact embodied and represented that culture, then, according to this logic, it was sick itself – something easily confirmed by a historical glance at its desperate conditions during the 1960s and 1970s (see Kloos, “History and Development”). This meant, in turn, that its traditional formulas alone were incapable of healing that culture or the Tibetan nation, and that it therefore needed to look elsewhere for help. Enter modernity, and with it, science. In Gyan Prakash’s words, “science has always been asked to accomplish a great deal – to authorize an enormous leap into modernity, and anchor the entire edifice of modern culture, identity, politics, and economy” (Prakash 12). Indeed, the crucial element the Tibetans lacked, but that was indispensable in their quest for cultural and national survival – and hence the preservation of their ‘traditions’ – was modernity. We have thus returned to the opening statement of Dr. Tenzin Thaye from the Men-Tsee-Khang’s Pharmacy Department, who was later appointed Visiting Physician to His Holiness the Dalai Lama: “When we lose the potency of tradition, then we need the help of modernity.”

Almost from its inception, Tibetan medicine in exile has undergone a gradual modernization process. Initially, this was due to the current Dalai Lama's personal initiative to reform and modernize Tibetan society as a whole and Tibetan medicine in particular – something his predecessor, the Thirteenth Dalai Lama, had already tried but largely failed to do (see Van Vleet; Choelo Thar 3–41; Goldstein). The condition of exile, however catastrophic otherwise, proved to be a fertile ground for the Fourteenth Dalai Lama to implement his visions of reform. Thus, in the 1960s, the reestablished Men-Tsee-Khang in Dharamsala was not structured like a monastic community (as its mother institution, the old Lhasa Mentsikhang, had been until 1959), but as a modern secular college and governmental health center, training predominantly lay students – including women – and in the beginning providing free, and then later inexpensive health care to the public. In the late 1960s, earlier than its counterpart in Lhasa, it mechanized pharmaceutical production, and during the 1970s adopted a capitalist business model and started generating profits, which it reinvested in Tibetan medicine's further development. By the 1980s, however, the Men-Tsee-Khang's sheer success, and Tibetan medicine's increasing importance to the exile Tibetan political cause, overtook the Dalai Lama's initiative as the main force behind modernization. Entering nationalist politics and the capitalist market, Tibetan medicine was called upon to modernize not only in material terms, for example, through the purchasing of new machinery, but also as an institution representing Tibetan knowledge, ethics, and culture. In other words, the more Tibetan medicine was forced to modernize in order to fulfill its role in advancing the Tibetan cause, the more it came, by virtue of its success, to represent an assumed 'traditional' exile Tibetan political and cultural identity. To mobilize the world on the side of the Tibetan political struggle, Tibetan medicine needed to acquire financial resources, secure solid legal status as well as scientific validity, and earn the faith of its own people. That is, it had to remake itself as a modern alternative health resource while at the same time remaining 'traditional' and uniquely Tibetan. Two of the solutions comprised dressing Tibetan medicine in modern garb with the help of clinical trials, and to providing modern packaging for its pharmaceuticals (see Kloos, "Navigating"). Others included transforming Tibetan medicine into a clearly defined 'medical system' – partly with the help of science – that could be regulated, standardized, and legally recognized (see Kloos, "Medical System"). Most importantly, however, its practice needed to ensure the reliability of its treatments in a modern context, for which, as we will see, modern means proved necessary. In other words, the most central domain in which tradition and modernity met, and needed to be negotiated, was that of efficacy.

There is a good reason for this. Most patients care or know little about Tibetan medicine's status as a symbol for Tibetan culture and civilization, much less its power to heal the Tibetan nation. What they do care about is its medical potency, its ability to cure their immediate physical or mental ailments. For all their nationalism, faith, and religiosity, Tibetans in exile are eminently pragmatic.

Like anyone faced with pain and suffering, they judge a medicine by whether and how it works: no matter how ‘Tibetan’ it might be, treatment is useless if it does not remedy their diseases. Tibetan medicine’s popularity and dissemination thus strongly depend on its medical efficacy, as evidenced by the spread of Men-Tsee-Khang branch clinics in urban India, which is largely driven by local demand and sponsorship in the wake of news of spectacular cures.⁶ Efficacy is the indicator of Tibetan medicine’s soundness and strength, and it is also crucial to the extent that doctors consider it the true locus of their practice’s identity, its traditional Tibetanness. Ultimately, the preservation of Tibetan medicine is nothing but the preservation of its efficacy. As a consequence, when the Men-Tsee-Khang discovered that the medical efficacy of its pills fluctuated, despite its best efforts to ensure their quality and potency through traditional means, those findings presented a serious challenge: at stake was not merely the health of a few individuals or the success of a clinical trial, but Tibetan medicine and culture themselves.

The Impotence of Tradition

Given the strong connection between Tibetan medicine’s clinical efficacy on the one hand, and its cultural and political efficacy on the other (see Kloos, “Alchemie”), it is not surprising that the otherwise conservative Men-Tsee-Khang administration decided to introduce into its pharmaceutical unit, at considerable cost and against the objections of several senior amchi, modern quality control technologies. But we are still left with the question of why the traditional methods of quality control no longer worked. For this, let us return once more to Tenzin Thaye’s statement: “When we lose the potency of tradition, then we need the help of modernity.” Most obviously, what Tenzin Thaye meant by ‘tradition’ is Tibetan medicine, the potency and efficacy of which is in danger of being lost. As he explained why this was so, he quickly arrived at the issue of quality control: the efficacy of Tibetan medicine is lost when traditional methods of quality control lose their ability to ensure the potency of the ingredients. Furthermore, as described above, traditional quality control is strongly connected to Buddhist ethics. ‘Tradition’ in Tenzin Thaye’s statement thus not only refers to Tibetan medicine, nor just to specific processes that we might today call ‘traditional quality control’. At the deepest level, ‘tradition’ for Tenzin Thaye means Tibetan Buddhist ethics, with altruism and compassion at its core.

6 For example, the Navi Mumbai branch clinic was opened after Men-Tsee-Khang doctors cured a boy with terminal lymphoplasmic leukemia. The Chennai branch clinic was opened after the successful treatment of metastatic lymph cancer in a retired Indian army colonel. There are similar stories behind the Men-Tsee-Khang’s Ahmedabad branch clinic and several others, while the New Delhi branch thrives on its reputation of achieving positive results in the treatment of asthma, diabetes, and other conditions.

This has been confirmed repeatedly by other exile Tibetan amchi, like Dr. Tsering Wangdue, who told me: “What is tradition, after all? Tradition is basically compassion, it’s the motivation. If we lose our tradition, it means we lose our compassion, and then we have lost the most important thing” (June 24, 2008, Dharamsala). Indeed, not just the term ‘tradition’, but Tibetan identity and culture as a whole are commonly equated by exile Tibetans, from the Dalai Lama down to illiterate farmers, with the Tibetan Buddhist ethics of altruism and compassion. So how, exactly, is the potency of tradition – of Tibetan medicine, of traditional quality control, of Tibetan Buddhist ethics, of Tibetanness itself – lost, as Tenzin Thaye claims? And what kind of help can modernity provide?

Ironically, it is Tibetan medicine’s extraordinary growth and success during the past decade that has rendered its traditional concepts and practices increasingly impracticable today. There are, first of all, the direct pharmaceutical consequences of Tibetan medicine’s recent entrance into the capitalist market, its rapid economic development, and the attendant shift to pharmaceutical mass production. Technical questions arise in the industrialization of any medicine: the necessary compromises between in this case Buddhist scriptures and the factory floor directly affect the end products’ potency (see Craig; Saxer; and Banerjee). What is more, with the rapidly mounting need for raw materials to produce ever-growing quantities of medicines, traditional plant collecting in the mountains by the doctors themselves has become insufficient, and, consequently, of less importance. In 2007–8, for example, Men-Tsee-Khang doctors and students only collected 2.7 percent of the 52 tons of raw materials used during that year, with another 8.2 percent donated mostly by Tibetan Buddhists from different Himalayan regions. The remaining 89 percent of the Men-Tsee-Khang’s raw materials were procured from various other dealers and markets. This left the institute with little knowledge and control over how, where, and when those materials were collected, cleaned, dried, stored, and transported.

Although Tibetan doctors and medical institutions have always purchased or bartered for a certain percentage of their raw materials from traders or villagers, the unprecedented rise in the proportion of those purchases exposes them to capitalist market forces and constitutes a major change in the practice of Tibetan medicine. Dr. Tenzin Namdul from the Men-Tsee-Khang’s Clinical Research Department explained the situation like this:

We are never saying that in our ancient medical texts there is no proper way of ensuring the quality of the raw materials, or of standardizing the finished pills. But we need to understand that with today’s global changes, so many herbs are becoming endangered species. Even if they are available, they tend to have far less efficacy than they used to have earlier. Take amla [Indian gooseberry], for example, which is a widely used ingredient not only in Tibetan medicine but also in Ayurveda, Unani, and Siddha. Now if I get it from Kangra this time, then next time from Amritsar, and the third time from Delhi – the same ingredi-

ent, we get it from three different places and agencies. We can't be sure about its potency, whether they have the same qualities, how they were dried and stored... So to make sure that we maintain the quality, we need to have tools to check whether they have the same potency. (April 19, 2008, Dharamsala)

Adding to this, Dr. Tenzin Thaye pointed out: "Nowadays it's not like before. All the plants, all the medical ingredients are changing [...] not because of nature, but because of the people who are selling them. If they want to make money, they may mix other plants in, so one really has to be careful" (September 19, 2008, Dharamsala).

In a nutshell, losing control over the first stages through which the raw materials pass on their way to the market is nothing less than a loss of control over quality. It is difficult to utilize traditional monitoring methods to determine whether plants have been collected, cleaned, dried, and stored correctly, or whether they have been polluted with pesticides or other chemicals. As traders struggle to satisfy the huge demand for raw materials created by the recent boom in herbal medicines and products in India and abroad (whether under the name of Tibetan medicine, Ayurveda, Unani, Siddha, or Traditional Chinese Medicine), it is almost inevitable that the quality of their herbs will be inferior to those collected by amchi. Furthermore, the growing commercial exploitation of wildcrafted plants also leads to an environmental degradation that affects the size, quantity, and quality of herbs the amchi are able to collect, even if they do travel to the mountains and gather the plants themselves.

As Tenzin Thaye mentioned, inferior quality of medical ingredients may also be a direct result of the traders' attempts to maximize their profits by unethical means. Examples of such cheating include failing to properly dry and clean the plants so that they weigh more, selling old or deteriorated plant material, and adulterating or totally replacing expensive raw materials with cheaper ones. As altruism and compassion are lost in the market place of greed and corruption, the potency of Tibetan medicine suffers. Therefore, it is not that traditional quality control is inadequate today, but that it has become impossible to practice in today's market economy. The only solution to ensure a certain level of quality, then, is the use of modern scientific methods, such as microscopic and chemical analyses, with which adulterations, moisture levels, and pollution can be detected and measured.

There is yet another problem with buying raw materials from the free market. As traders source their herbs from different and often changing locations all over South and Central Asia and even beyond, what is in question is not only the quality of the raw materials but also their type, that is, their species. By their own admission, many amchi acknowledge that traditional Tibetan plant taxonomy is imprecise and often confusing, with different names given to the same species (as defined by Western taxonomy) or different species conflated under one Tibetan

name (see Shankar et al. 1501). As long as doctors who possessed generations of experience collected the herbs locally this situation was not a problem. Nor is it an issue with a large percentage of the raw materials bought on today's market, the bulk of which consists of common food spices like cloves or cardamom. However, in the case of certain mountain herbs, dried barks and roots, or plant material that has already been processed into powder form, Tibetan doctors find it difficult to discern whether or not the raw materials they are getting are the ones they actually want.

The amchi have found two solutions to deal with these dilemmas. One is to cultivate plants that are more expensive, rare, or difficult to identify. This is an attractive alternative because it is potentially cheaper, environmentally sustainable, avoids the mechanism of the capitalist market place, and thus helps the amchi regain control over the most sensitive aspects of their herbal supplies. Indeed, the Men-Tsee-Khang has purchased six acres of land near Darjeeling for this purpose, and other individuals and organizations have also begun to cultivate medicinal herbs, especially in Ladakh. The problem with this solution is that so far it has not worked. While there have been some successes in cultivating plants that are already easily available and identifiable, it is exceedingly difficult to cultivate rare mountain herbs, and all attempts to do so have failed. The other, more practical answer is to employ the help of modern science in the form of Linnaean taxonomy, microscopic analysis, or chromatography. Still, in many cases this is not as easy as it may sound: if done properly, even the seemingly simple task of matching or translating Tibetan plant names into Western taxonomy can take years of research (see Kletter/Kriechbaum, and Shankar et al.).

The Impotence of Science

Quality control involves more than ruling out pollution and botanical confusion, however. Rather, its central concern is the standardization of medical efficacy, something the Men-Tsee-Khang's diabetes study demonstrated all too clearly. Doctors, patients, and researchers all need to be sure that the medication prescribed, ingested, or tested yesterday will have the same effect tomorrow. Yet, while modern science can help in detecting various kinds of contamination in raw materials or finished pills, the standardization of Tibetan medicine's potency reveals the limits of modern technologies as much as it shows their indispensability. For all its technological sophistication and promises of making Tibetan medicine and its efficacy visible, conventional, reductionist modern science is unable to check, measure, or ensure the pharmaceutical potency of Tibetan formulas and their ingredients – something that experienced amchi can easily do by simply relying on their knowledge and the faculties of taste, smell, and other senses. Modern quality control standards, however, restrict their focus to major active ingredients, and thus ignore traditional collection protocols, processing

techniques, storage, and shelf life, all of which are an essential part of Tibetan standards (Shankar et al. 1504). Furthermore, biopharmaceutical tests are unable to analyze the individual and synergetic effects of up to one hundred sixty different herbal, mineral, metal, or animal ingredients contained in some Tibetan pills (Harilal 50). Put another way, the potency and efficacy of Tibetan medicine is beyond the grasp of science – immeasurable, invisible, irreducible to a particular chemical, molecule, or active ingredient. Even if it could be reduced to the presence of certain chemicals, Tsewang Gyatso explained that for these materials, “there are no established norms or standards that we can rely on to check if the [chemical] values are in the normal range or not” (December 31, 2007, Dharamsala).

Yet, it is clear that modern science is necessary in order to standardize potencies and ensure the safety and quality of mass produced medicines. As the diabetes study showed, it is difficult for amchi to compare and regulate potencies diachronically. Moreover, with traditional methods alone, they are unable to establish any reproducible standards of efficacy or any reliable system of documentation acceptable under national or international drug regulations. Indeed, this is not simply a problem for Tibetan medicine, but for most pharmaceutical-based systems of ‘traditional medicine’, leading the Indian scholar Darshan Shankar and others to propose “intercultural quality standards” (Shankar et al.), which would combine modern and traditional sciences without compromising the integrity and standards of either. Exile Tibetan amchi have thus begun to implement modern and traditional approaches to ensure and ‘preserve’ the quality of their medicines. The idea is to first check the potency of an ingredient or finished pill by traditional means, and then (if acceptable) conduct a chemical analysis to establish the values of its chemical composition. Over the years, by comparing the values of different batches of the same ingredient or medicine with each other, it may be possible to establish chemical norms that reflect and correspond to the amchi’s expertise. In short, such intercultural quality standards, through the figures and graphs of modern science, would make Tibetan pharmaceutical knowledge visible and legible.

No doubt, establishing such standards is complicated and labor intensive work. Yet, since the establishment of a new quality control laboratory at the Men-Tsee-Khang’s pharmaceutical unit in 2009, its two-person staff (trained in microbiology) has not only tested samples of each batch of raw materials and finished pills for moisture levels, mold, and fungus, but has also begun compiling chemical analyses in order to create and systematize such standards. Since most of the one hundred seventy types of medicine used by the Men-Tsee-Khang are only produced once a year (or even less frequently), in its fifth year this effort is still in its beginning stages, and is mostly limited to documentation rather than a transformation of pharmaceutical practice. As Dr. Tenzin Thaye told me,

TT: Actually we work fully according to the tradition. But for documentation, we also try to develop the other way, like scientific tests. For example now, when we are drying the pills, our doctors check whether they are dry or not by chewing them – in the Buddhist way. But for quite some time now, the scientists are testing them too. When we say, “ok the pills are dry,” then they also test them, to collect some documentation. Sometimes, with some medicines that are very oily, it happens that we say they are dry, but when they check them, they say the oil content or moisture is high.

SK: And then what happens? You say it’s dry, and they say it’s not dry...

TT: They say that the moisture is a little high. But it may be because of the nature of the plants. So they just note it down.

SK: And do you dry them more because of that?

TT: No, no. Actually, the doctors and people who work there are very efficient, they have many years’ experience, chewing and testing the pills... (June 24, 2008, Dharamsala)

In other words, for the most part, modern quality control at the Men-Tsee-Khang serves, like the clinical trials, as an ‘ornament’ – producing stacks of paper documenting (one could say, ‘decorating’) every step of the pharmaceutical production process, making the Men-Tsee-Khang’s medicines more attractive to non-Tibetans, instilling faith in skeptics. With the goal of securing legal recognition and establishing an export market in mind, the Men-Tsee-Khang has been working to implement Good Manufacturing Practices (GMP) in its pharmacy for several years now. Given the high standards and size of its pharmacy on the one hand, and the relative ease of meeting Indian GMPs (which were designed with India’s own medical traditions in mind) on the other, the Men-Tsee-Khang’s production facilities are already almost fully GMP-compliant. What is missing, however, are proper documentation procedures. Indeed, as Tsewang Gyatso and Tenzin Namdul told me on different occasions, it is exactly this consistent and comprehensive documentation that remains the most difficult requirement for the amchi to meet – partly because of the sheer amount of work and logistics required, and partly because they do not see any value in such an undertaking beyond complying with cumbersome legal regulations.

But despite Dr. Tenzin Thaye’s assurance that traditional methods are still being followed, the influence of the knowledge generated through modern quality control procedures is growing, at times directly interfering with the production process. For example, there have been occasions when whole batches of medicines have been discarded based on the advice of the laboratory staff. Not surprisingly, this gradual transfer of power away from traditionally trained, experienced amchi to young college graduates with degrees in natural sciences has caused concerns among the older practitioners. Dr. Tsering Dorjee from the Materia Medica Department, for example, told me:

I sometimes feel very doubtful about the scientific results. If we say, “science is modern and therefore it has to be accepted” – I don’t think so. It still needs experience too. And the basic, basic, basic thing is to have a good heart. Also, sometimes people say that according to science, something is the case. But on what kind of scientific basis do they say that? Is the basis really firm and true, and were the experiments that have been done in the past – if they have been done at all – really reliable? And how reliable will this knowledge remain in the future? Science is changing all the time, knowledge is constantly upgrading. So we cannot depend on scientific methods one hundred percent. Therefore, I feel that whether in the case of raw materials or finished products, the doctors should be the main ones in charge. Not the scientists, which sadly is sometimes done here at the Men-Tsee-Khang. Personally, I do not agree with this at all. Doctors who have a lot of experience should control this. If they need some backup from the scientists, they can tell them to do tests. And then they can combine these two knowledges, and say what is ok and what is not. This should happen on the basis of a good heart, a good motivation. (September 11, 2008, Dharamsala)

Dr. Tsering Dorjee was worried that the doctors’ traditional experience is being increasingly subordinated to modern education. But even more than that, he had apprehensions that Tibetan medicine’s Buddhist ethics – that is, its Tibetan identity, located in the doctors’ “good hearts” – was slowly being replaced by the cold machines of modern science. Nevertheless, most people at the Men-Tsee-Khang insisted that this was not a matter of replacement but of complementing. Modern quality control technologies might make up for a lack of Buddhist ethics in the case of Indian herb traders and business people, but no amount of documentation or number of lab tests could replace Buddhist ethics among the Tibetan amchi. To the amchi, Ayurveda provided a particularly illustrative negative example: far more modernized than Tibetan medicine, it was seen as corrupt and consequently of little medical use. Tsering Tashi, who would become the Men-Tsee-Khang’s director in 2012, told me in 2009:

They have lots of scandals in Ayurvedic factories, you know. Despite all their control systems: first they have to [issue] a tender for herb suppliers, then they have scientists with all sorts of equipment to monitor the quality, so many things! We have none of that. But somehow, dirt [gets] into their medicine! [laughs] On the other hand, we are somehow able to control that. (May 19, 2009, Evanston, IL)

Yet, Dr. Tsering Dorjee’s misgivings are valid, as the biggest threat to Tibetan medicine and culture today is not seen in the Chinese state anymore, but in the amchi’s moral decline brought about by temptations of the capitalist market. Thus, an article in the English-language exile Tibetan magazine *Tibetoday* argues, “Unfortunately, the Tibetan *Sowarigpa* that once survived the ideological holocaust of Mao’s China is now facing its toughest enemy and opponent both inside

and outside Tibet. Physicians [...] maintain that the ills of greed, neglect and the commercialization of the *Sowarigpa* tradition in and outside Tibet would do more harm in the long run when it comes to preserving the authenticity and the professional expertise of the *Sowarigpa* tradition” (Chukora 14). Indeed, if the amchi’s motivation shifted from helping others to making a lot of money quickly, as was – at least in the exile Tibetans’ perceptions – slowly but increasingly the case, then Tibetan medicine was going down the same undesirable route Ayurveda had taken some decades earlier. The results of this scenario were clear to all: Tibetan medicine’s efficacy – and reputation – would diminish due to the amchi’s desire to maximize their profits. This would not only threaten the long-term survival of Tibetan medical knowledge, but also harm Tibetan culture and the Tibetan nationalist cause. While modern quality control was unavoidable in a broader, non-Buddhist context of capitalism and science, Buddhist ethics remained the foundation of Tibetan medicine’s efficacy by ensuring virtuous behavior where it mattered most, that is, among the amchi. Consequently, in recent years the Men-Tsee-Khang has placed increasing importance on Buddhist ethics, trying to instill in its students and amchi a sense of social responsibility that blends Buddhist ethics with patriotism.

The limitations of modern science are, however, not confined to the arena of preventing corruption and malpractice but extend to its core functions of measuring, discovering, and making visible. As indispensable as modern quality control has become in a context of pharmaceutical mass production, the capitalist market, and national and international drug regulations, it cannot measure or control Tibetan medicine’s pharmaceutical potency. Dr. Tenzin Thaye’s idea of establishing modern scientific standards for Tibetan medicine’s efficacy is revealing because it implies the reverse of his earlier statement. It may well be true that modernity can help when the potency of tradition is lost, but this help is seriously limited by modernity’s inability to understand this tradition. Ironically, modern science is asked to prevent the loss of something it cannot grasp, and to make visible what it cannot see. As a consequence, it requires the help of the tradition it is supposed to assist in the first place. In a reversal of Tenzin Thaye’s quote, it is thus also true that modernity, confronted with its own impotence, needs the help of ‘tradition’. The amchi’s expert knowledge remains critical to any serious effort to develop modern quality control that actually works for Tibetan medicine.

Conclusion: Fugitive No More

Volker Scheid, in his study *Currents of Tradition in Chinese Medicine*, argues that ‘tradition’ is not a static entity but a process that has to change constantly in order to continue. This resonates with the composite Tibetan term for ‘tradition’ or ‘traditional,’ *srol gyun*, where *srol* (tradition, system, custom, habitual practice, habit) indicates tradition’s processual nature, and *rgyun* (continuity, stream, ever-

lasting) indicates its continuity. It also resonates with the views of some of the most prominent exile Tibetan intellectuals. On a rainy January day, Tenzin Tsundue, the well-known Tibetan poet-activist, told me:

These days, whatever someone does – play the flute, practice medicine, whatever – they say it's to preserve our culture. Of course, I am Tibetan too, and I understand that in our situation there's a justified fear of losing our culture. But what is Tibetan culture? Is it what we had in Tibet before 1959? If you just preserve culture the way it was at a certain point in time, it becomes redundant. Then it's not culture, it's history; it's like something in a museum. Culture is alive, though, and therefore it has to change, you can't prevent that. And not everything about our culture, the way it was before the Chinese invaded us, was good. So we have to evolve, keep what's good and develop or change the rest. In my opinion, this is the only way our culture – any culture – can survive. (January 16, 2008, Dharamsala)

Without a doubt, Tibetan medicine has to move forward in order to survive and remain relevant. And certainly it has advanced, from an unknown regional medical tradition struggling to endure in the 1960s to today's thriving alternative health resource, which is rapidly expanding worldwide. Tibetan medicine's singular state as a fugitive knowledge was key to its radical transformation and global spread in the later part of the twentieth century. It was precisely the Tibetan refugees' concern for cultural survival and the preservation of knowledge in exile that mandated its engagement with modernity and acted as a catalyst for change. As a result, Tibetan medicine has regained some of its old status as a hegemonic knowledge in its own right. Fugitive no more, today it is not only emerging as a multimillion dollar knowledge-industry, but also represents the intellectual and cultural power of Tibet in Asia and the world.

This development, however, has ushered in a new range of problems, regarded by exile Tibetans as new threats to Tibetan medicine's survival. On their own, Tibetan medicine's knowledge, traditions, and pills are indeed losing potency in the modern world of GMP regulations, capitalism, and mass production. Requiring new tools, new technologies, and a fresh understanding of their own professional knowledge and expertise, practitioners have turned to modern science for help. Yet, contrary to most clinical studies that have been conducted so far, modern pharmaceutical quality control goes beyond merely decorating Tibetan traditions with the ornament of science. Rather, the amchi's engagement with modern science in the domain of quality control leaves both sides redefined and perhaps – existing power inequities and frictions notwithstanding – even reinvigorated. Today, modern technologies and science have become an existential condition for the very core of Tibetan medicine's identity, that is, its ethics and efficacy. It has become impossible for contemporary amchi to ensure the safety, quality, and efficacy of their medicines – and thus fulfill their ethical obligation of providing the

best possible care to their patients – by traditional means alone. It is the resulting insertion of modern scientific concepts and methods into the very foundations of Tibetan medical knowledge and practice that constitutes Tibetan medicine's 'silent revolution'. Yet, just as Tibetan medicine's Buddhist ethics, epistemic methods, and centuries of experience have come to depend on modern science for their continued existence, they emerge as more important than ever before in the effort to preserve not only the medical, but also the cultural and political efficacy of Tibetan medicine and the Tibetan nation. As such, they are no longer 'tradition', but constitute the product of Tibetan medicine's efforts to preserve culture and help the world: an alternative, uniquely Tibetan modernity.

Works Cited

- Adams, Vincanne. "Particularizing Modernity: Tibetan Medical Theorizing of Women's Health in Lhasa, Tibet." *Healing Powers and Modernity: Traditional Medicine, Shamanism, and Science in Asian Societies*. Ed. Connor, Linda. and Geoffrey Samuel. Westport: Bergin & Garvey, 2001. 197–246.
- . "Establishing Proof: Translating 'Science' and the State in Tibetan Medicine." *New Horizons in Medical Anthropology*. Ed. Nichter, Mark and Margaret Lock. London, New York: Routledge, 2002. 200–20.
- . "Randomized Controlled Crime: Postcolonial Sciences in Alternative Medicine Research." *Social Studies of Science* 32 (5–6) (2002): 659–90.
- . "Integrating Abstraction: Modernising Medicine at Lhasa's Mentsikhang." *Soundings in Tibetan Medicine: Anthropological and Historical Perspectives*. Ed. Mona Schrempf. Leiden: Brill, 2007. 29–43.
- Aschoff, Jürgen, and Tashi Y. Tashigang. "On Mercury in Tibetan 'Precious Pills'." *Journal of the European Ayurvedic Society*, 6 (1997): 129–35.
- Banerjee, Madhulika. *Power, Knowledge, Medicine: Ayurvedic Pharmaceuticals at Home and in the World*. Hyderabad: Orient Black Swan, 2009.
- Choedon, Tenzin, Dawa Dolma, and Vijay Kumar. "Pro-Apoptotic and Anticancer Properties of Thapring – A Tibetan Herbal Formulation." *Journal of Ethnopharmacology* 137 (2011): 320–26.
- Choelo Thar. *'Gro phan sman rtsis khang gi gdan rabs dri med gyi me long*. Dharamsala: Bod gzhung sman rtsis khang, 2000.
- Chukora, Tsering Agloe. "The Sorig Revolution." *Tibetoday* 1(4) (2007): 14–18.
- Craig, Sienna. "'Good' Manufacturing by Whose Standards? Remaking Quality, Safety, and Value in the Production of Tibetan Pharmaceuticals." *Anthropological Quarterly* 84(2) (2011): 331–78.
- Dalai Lama. *Ancient Wisdom, Modern World: Ethics for the New Millennium*. London: Little, Brown & Co., 1999.
- . *Srid zhi'i rnam 'dren gong sa skyabs mgon chen po mchog nas bod gzhung sman rtsis khang gi sman rtsis las slob yongs la stsal ba'i bka' slob phyogs bsdebs bzhugs so*. Dharamsala: Bod gzhung sman rtsis khang, 2007.
- Deumar Geshe Tenzin Phuntsog, (de'u dmar dge bshes bstan 'dzin phun tshogs). *Shel gong shel phreng*. Dharamsala: Men-Tsee-Khang, 1994.
- Dodin, Thierry, and Heinz Räther, eds. *Imagining Tibet: Perceptions, Projections, and Fantasies*. Boston: Wisdom Publications, 2001.

- Garrett, Frances. "Critical Methods in Tibetan Medical Histories." *The Journal of Asian Studies* 66(2) (2007): 363–87.
- Goldstein, Melvin. *A History of Modern Tibet, Volume 1: 1913–1951. The Demise of the Lamaist State*. Berkeley, Los Angeles: University of California Press, 1989.
- Good, Byron. "The Heart of What's the Matter." *Culture, Medicine and Psychiatry* 1 (1977): 25–58.
- Harilal, M.S. "'Commercialising Traditional Medicine': Ayurvedic Manufacturing in Kerala." *Economic and Political Weekly* XLIV(16) (2009): 44–51.
- Janes, Craig. "The Transformations of Tibetan Medicine." *Medical Anthropology Quarterly* 9 (1995): 6–39.
- . "Tibetan Medicine at the Crossroads: Radical Modernity and the Social Organization of Traditional Medicine in the Tibet Autonomous Region, China." *Healing Powers and Modernity: Traditional Medicine, Shamanism, and Science in Asian Societies*. Ed. Connor, Linda and Geoffrey Samuel. Westport: Bergin & Garvey, 2001. 197–221.
- . "Buddhism, Science, and the Market." *Anthropology & Medicine* 9(3) (2002): 267–89.
- Kletter, Christa, and Monica Kriechbaum, eds. *Tibetan Medicinal Plants*. Stuttgart: Medpharm Science Publishers, 2001.
- Kloos, Stephan. "The History and Development of Tibetan Medicine in Exile." *Tibet Journal* 33(3) (2008): 15–49.
- . *Tibetan Medicine in Exile: The Ethics, Politics and Science of Cultural Survival*. PhD Dissertation, Department of Anthropology, History and Social Medicine, University of California, 2010.
- . "Navigating 'Modern Science' and 'Traditional Culture': The Dharamsala Men-Tsee-Khang in India." *Medicine between Science and Religion: Explorations on Tibetan Grounds*. Ed. Adams, Vincanne, Mona Schrempf, and Sienna Craig. Oxford, New York: Berghahn Books, 2011. 83–105.
- . "Die Alchemie exil-tibetischer Identität: Anmerkungen zur pharmazeutischen und politischen Wirksamkeit tibetischer Pillen." *Curare* 35(3) (2012): 197–207.
- . "How Tibetan Medicine Became a 'Medical System'." *East Asian Science, Technology and Society* 7(3) (2013): 381–95.
- Lopez, Donald. *Prisoners of Shangri-la: Tibetan Buddhism and the West*. Chicago: University of Chicago Press, 1998.
- Men-Tsee-Khang. *The Basic Tantra and the Explanatory Tantra from the Secret Quintessential Instructions on the Eight Branches of the Ambrosia Essence Tantra*. Dharamsala: Men-Tsee-Khang, 2008.
- Namdul, Tenzin, et al. "Efficacy of Tibetan Medicine as an Adjunct in the Treatment of Type 2 Diabetes." *Diabetes Care* 24 (2001): 176–77.
- Pigg, Stacy Leigh. "The Credible and the Credulous: The Question of 'Villagers' Beliefs' in Nepal." *Cultural Anthropology* 11,2 (1996): 160–201.
- Powers, John. *History as Propaganda: Tibetan Exiles versus the People's Republic of China*. Oxford, New York: Oxford University Press, 2004.
- Prakash, Gyan. *Another Reason: Science and the Imagination of Modern India*. Princeton: Princeton University Press, 1999.
- Ridrag, Dawa. *Bod kyi gso ba rig pa las sman rdzas sbyor bzo'i lag len gsang sgo 'byed pa'i lte mig*. Delhi: Rig Drag Publications, 2003.
- Saxer, Martin. *Manufacturing Tibetan Medicine: The Creation of an Industry and the Moral Economy of Tibetanness*. Oxford, New York: Berghahn Books, 2013.

- Schaeffer, Kurtis R. "Textual Scholarship, Medical Tradition, and Mahayana Buddhist Ideals in Tibet." *Journal of Indian Philosophy* 31 (2003): 621–41.
- Scheid, Volker. *Currents of Tradition in Chinese Medicine, 1626–2006*. Seattle: Eastland Press, 2009
- Scott, James C. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press, 1998.
- Shankar, Darshan, P.M. Unnikrishnan, and Padma Venkatasubramaniam. "Need to Develop Inter-Cultural Standards for Quality, Safety and Efficacy of Traditional Indian Systems of Medicine." *Current Science* 92(11) (2007): 1499–1505.
- Van Vleet, Stacey. "Children's Healthcare and Astrology in the Nurturing of a Central Tibetan Nation-State, 1916–24." *Asian Medicine: Tradition and Modernity* 6(2) (2010– 2011): 348–86.