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## Chapter 1

# Introduction: “It takes time to tame a wild horse”

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One day I asked Dr.<sup>1</sup> Tenzin Thaye, one of the visiting physicians of the Fourteenth Dalai Lama and a senior Tibetan physician at the Men-Tsee-Khang<sup>2</sup> in Dharamsala, northwestern India, about the Tibetan medical meaning of *dülwa* (*‘dul ba*), or “taming.” His simple examples summarize the central theme of this book:

*Dülwa* actually means taming. When we get a wild animal and slowly train it, we call it *dülwa*. In the same way we also calm down the roughness of a plant and the poisons of mercury. It takes time to tame a wild horse. [...] Taming mercury takes many steps. Taming takes time. Likewise, you cannot tame the mind instantly; it takes time to tame negativities.<sup>3</sup>

Tenzin Thaye here speaks of Tibetan medical ideas of taming that involve subduing and controlling a substance and utilizing the poisonous as a vitalizing agent, and shaping its special potency, in Tibetan called *nüpa* (*nus pa*).<sup>4</sup> Tenzin Thaye alludes to several contexts in the Tibetan world where the term *dülwa* is used, not only in relation to taming mercury. The historical period of the introduction of Buddhism into Tibet is filled with stories of

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- 1 In India, Tibetan physicians often call themselves doctor and use Dr. as their title for their traditional *menpa kachupa* (*sman pa dka' bcu pa*) degree, which they are legally allowed to do when registered under the Central Council of Indian Medicine. However, *menpa kachupa* is not equivalent to a biomedical Doctor of Medicine (MD) degree. For various reasons, some Tibetan medical practitioners prefer to be called doctor, others use *menpa* (*sman pa*), the Tibetan term for physician, or *amchi* (*am chi*), the Mongolian-derived word for a Tibetan medical practitioner. Due to its common usage, and convention in Tibetan language, *amchi* is not italicized and is only used in the singular. In this book, I address physicians with their preferred title, usually Dr., or with their full names. I use doctor, physician, and *amchi* interchangeably.
  - 2 The Men-Tsee-Khang is the largest Tibetan medical institute in India. See the Fieldsite section below for details.
  - 3 Personal communication, McLeod Ganj, December 7, 2014.
  - 4 *Nüpa* generally refers to the capacity of a substance to have an effect. Several different definitions and types of *nüpa* are mentioned in Tibetan medical texts. See Chapter 2 and Gerke (2019b) for more details.

how the construction of monasteries was aimed at "taming" local demons into protectors during a religious and political movement of Buddhist dominance over "wild" Tibetan landscapes and local beliefs (Gyatso 1987). The term *dülwa* also means discipline and refers to monastic regulations of fully ordained monks. In Buddhist mindfulness practices the five mental poisons (*sems dug lnga*)—desire, hatred, ignorance, pride, and envy—are also "tamed," i.e. transformed into compassion.

In this book, I follow the story of mercury ethnographically, textually, and metaphorically through several centuries of Tibetan medical histories. I also trace its sources of contemporary trade in the Khari Baoli market in Old Delhi to its use in processed forms by Sowa Rigpa medical practitioners in India and Nepal. I present various positions of Tibetan physicians to highlight the story of mercury and its transformation into an elixir used in their medical traditions, widely known under the name of Tibetan medicine or Sowa Rigpa (*gso ba rig pa*, the science of healing).<sup>5</sup>

Recently, debates regarding the toxicity and safety of mercury as a strong neurotoxin and environmental pollutant have received greater attention globally, especially after the initiation of the global mercury ban by the United Nations Environment Programme (UNEP, founded in 1972) which was signed by many countries, including India in 2014. In turn, these debates have intensified the existing discussions within Asian medical systems (e.g. Sowa Rigpa, Ayurveda, Unani, Siddha, Traditional Chinese Medicine, etc.), which use processed mercury composite compounds (largely in the form of mercury sulfide) in some of their medicines. It is important to note that most Tibetan medical formulas are plant and mineral based and contain no mercury or other metal ingredients.

This book does not answer the question of whether the use of certain mercury compounds in Tibetan medicines is safe. Rather, it analyzes what is at stake in asking such a question. I explore what questioning mercury's safety in Sowa Rigpa medicines entails in terms of the politics of toxicity, the social construction of safety, and the ways in which medical epistemologies are translated cross-culturally, adopted, resisted, and used for different purposes by different stakeholders.

To situate the positionality of Tibetan medical practitioners within these contemporary contexts, I first trace the history of mercury practices in Tibet, beginning in the thirteenth century. I then sketch the larger picture of Sowa Rigpa mercurial medicines beyond Tibet's cultural borders and into the diaspora in India and Nepal into the twenty-first century. The material presented is diverse and complex, drawing on both textual research and ethnographic encounters, addressing issues of historical narrative, lineage, gender, embodied practices, poison myths, and pharmacological

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5 Sowa Rigpa was recognized by the Indian government under the ministry of AYUSH in 2010, representing Ayurveda, Yoga and Naturopathy, Unani, Siddha, Sowa Rigpa, and Homeopathy. See Craig and Gerke (2016) on a critical discussion of the naming of Sowa Rigpa; see also Blaikie (2016) and Kloos (2016) on the recognition process in India.

techniques of taming mercury, as well as the use of science. All of these are linked by the overarching question of what is involved in the social construction of toxicity and safety, and what this tells us about the heuristic concept of transculturality as a form of cultural translation and medical knowledge production.

This book is also about contested definitions of toxicity in general and how notions of toxicity vary across cultural contexts and are contingent on different interpretations of science.<sup>6</sup> It questions how global regulations based on biomedical frameworks often disregard emic medical understandings of toxicity in the pursuit of public health. In Sowa Rigpa theory mercury is recognized as a toxic substance when left unprocessed. Since it continues to be used in Tibetan practices of transforming poisons into elixirs (therapeutically considered highly potent), the global condemnation of elemental mercury and its various derivatives as a neurotoxin and environmental pollutant has stirred critical debates on its safety. Following how notions of mercury as a toxic substance shift both globally and locally within these geopolitical debates raises important questions beyond the field of Asian medicine: what happens if a poisonous substance can also be considered therapeutic once medical practitioners refine and process it? How do such notions of toxicity change (even among Sowa Rigpa practitioners) as global health regulations come to the forefront? The case of Sowa Rigpa mercury practices illustrates this complex and contested interface between biomedical and indigenous epistemologies of toxicity, thus offering a timely contribution to studies in transculturality.

Over eight chapters, *Taming the Poisonous* follows mercury through these larger global forms of governance, legislation, and control, and investigates how they affect Tibetan medical practice on the ground. For centuries, Tibetan physicians have recognized the toxicity of this enigmatic silvery heavy metal, which is volatile and liquid at room temperature and is visibly transformed in its color, mobility, and form when processed with other metals and precious substances, herbs, and minerals. I analyze Tibetan medical approaches to toxicity, potency, and safety and what happens when these approaches are translated, negotiated, and evaluated in local and global contexts, which are influenced by definitions of toxicity and safety steered by scientific hegemonies. I also describe how—in this increasingly globalized world—those who politically, legally, and economically control definitions of “toxicity” also hold power over the perceived potency of poisonous substances (see Corder 2016). Toxicity thus becomes more than a medical concept; it is also a platform for hegemonic powers to impact acts of cultural translation (see below). By following the poison, so to speak, this book explores how the noxiousness of mercury

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6 For definitions of science and what constitutes modern science in Tibetan medical contexts, see Adams, Dongzhu, and Le (2010), Adams, Schrempf, and Craig (2011b, 1–3), Craig (2012), and Kloos (2011). For different interpretations of toxicity and purity in pharmaceutical science and Sowa Rigpa, see Tidwell and Nettles (2019).



Figure 1: Various precious pills from India and Nepal wrapped in different colored silk cloth. Many of them contain processed mercury in the form of an organometallic mercury sulfide compound.  
Photo: Brigitta Gerke-Jork (Gerke-Jork 2013/CC-BY-SA 4.0).

has been perceived and negotiated by different players both historically and in the present period of globalization of Sowa Rigpa.

As we shall see, the transformation of a base substance into something potent is a theme that Tibetans made their own, not only in the development of tantric Buddhist ideas of taming but also in their medical traditions of making precious medicines with refined mercury as one of the key ingredients. While unpacking ideas of taming, or *dülwa*, I argue that poisons become powerful agents not only in the making of rejuvenating and precious medicines, but also in the purification and control of social and physical environments as well as in the cultural construction of toxicity and safety. This involves notions of ritual and environmental pollution and poisoning fears and practices, as well as negotiating the power of potent poisons during encounters with modern science. This book thus also explores the ways in which mercury processing practices parallel social, historical, and religious ideas of taming in Tibetan societies. Today, as in the past, mercury processing practices have created prestige and power for those securing, patenting, and preserving the pharmaceutical skills of taming elemental mercury and preparing what are considered and valued as the most precious medicines—precious pills or *rinchen rilbu* (*rin chen ril bu*) (Fig. 1).

Precious pills, also called jewel pills because of their precious and semi-precious gemstone content, are among the most well-known Tibetan

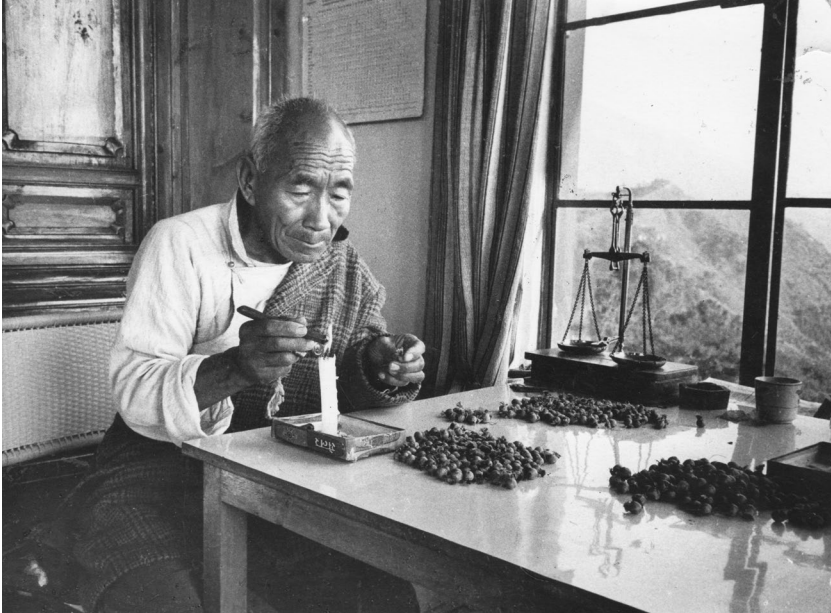


Figure 2: Precious pills were wrapped in silk cloth and sealed with wax by hand at the Men-Tsee-Khang in Dharamsala, India, before the introduction of machine-made blister packs in 2009.

Photo: Men-Tsee-Khang (Men-Tsee-Khang 1990s / CC-BY-SA 4.0).

medicines today. They are multi-compounds, each of which contains from twenty-five to about 160 plants and minerals as well as pre-processed precious ingredients, for example gold, silver, rubies, diamonds, corals, turquoise, pearls, and sapphires. For centuries, they have held a special place in Tibetan societies. They have been used for treating poisoning, fevers, malignant tumors, infections, neural disorders, strokes, and epilepsy (Sonam Dolma 2013), and have also been regarded as providing protection from epidemics, such as SARS (Craig and Adams 2008). Before the advent of Good Manufacturing Practice (GMP) and machine-made pill sachets in the People's Republic of China (PRC) in 2001 (Saxer 2013), their preciousness used to be—and in some cases still is—culturally marked by the pills' individual silk wrapping (Fig. 1 and Fig. 2).<sup>7</sup>

The most precious composite added to many precious pills as a catalyst is called *tsotel* (*btsotal*, meaning cooked or refined ash).<sup>8</sup> *Tsotel* is a com-

7 The Men-Tsee-Khang in Dharamsala replaced traditional wrapping with machine-made blister packs in 2009. See MTK (2010).

8 *Tsotel* is also translated as "cooked powder," since it contains not only several metals that have been calcined into ash but also many other ingredients that were cooked or triturated. After processing, the *tsotel* compound appears more like a black powder. Dr. Pasang Yonten, personal communication through Jan van der Valk, October 2017.

plex organometallic mercury sulfide compound, containing eight metals and eight minerals that are all processed over several weeks with numerous plants and other ingredients. The process of making *tsotel* is known as *ngülchu tsodru chenmo* (*dngul chu btso bkru chen mo*), or "Great Mercury Refinement," briefly referred to as *tsodru chenmo*.

Its complex manufacturing process is the pride of Tibetan medical experts. While there are shared resemblances to Indian and Chinese alchemical techniques of transforming poisonous mercury through trituration with sulphur and using metals in the form of ash (Skt. *bhasma*), the complex ways of making *tsotel* appear to be a uniquely Tibetan practice. This book sketches some of the historical trajectories of the *tsodru chenmo* practice, its transmission via medical lineages, and some of the contestations of its knowledge transmission and safety concerns in the twentieth and twenty-first centuries. Making *tsotel*, however, is not the only way that mercury has been processed in Tibet's past. Medical texts list numerous ways of taming mercury, but preparing *tsotel* is the most elaborate, prestigious, and popular method in today's Tibetan medical manufacturing units, and is considered the safest.

During my ethnographic encounters with Tibetan medical practitioners in India and Nepal, I explored how practitioners who currently use processed mercury in their medicines have been affected by the global mercury ban recently initiated by the UNEP. How do they translate global environmental and public health concerns, which have been intensified by the ban, into their local worlds of medicine making, called *menjor* (*sman sbyor*)? How do they explain the safety that their medical texts have ascribed to the use of processed mercury—largely as mercury sulfide—in a variety of medicines for hundreds of years and which is currently being questioned through the policies developed by environmental protection agencies?

This book does not question that liquid metallic (or elemental) mercury is highly toxic, especially when heated and inhaled. Tibetan authors do not contest its toxicity either and have described this "silver fluid"—which translates into Tibetan as *ngülchu* (*dngul chu*)—as highly poisonous in medical texts dating back to the twelfth century. However, in this book I raise issues surrounding the social construction and perceptions of toxicity and safety as well as the transculturality of notions of what constitutes and lends power to a poison.

## Transculturality in acts of translation

*We also studied science, I understand what they [Western scientists] feel about research, but they also need to understand us, to know our ways of thinking, so we have an integration, so we have a bridge between us. I feel that only one way is not good (Sonam Yangdon, research assistant and translator on the Tibetan–Israeli research team during the second mercury toxicity study at the Men-Tsee-Khang in Dharamsala).<sup>9</sup>*

*The act of translation is itself very much involved in the creation of knowledge” (Tymoczko and Gentzler 2002, xxi).*

This book offers a contribution to the cross-disciplinary scholarship on transculturality, or transculturation, attesting to the growing trend in the social sciences and humanities to view and approach cultures as dynamic, heterogeneous, fluid processes with porous borders, rather than as stable entities marked by demarcated lines of practice. To date, multiple definitions of the transcultural paradigm exist across many disciplines, demanding interdisciplinary approaches, but serving “different needs in different fields of research” (König and Rakow 2016, 93–95). From a historical perspective, transculturality “renounces comparatism and focuses on contact zones, adaptation and exchange processes, modes of translation, and moments of crossing borders in a global context” (Herren, Rüesch, and Sibille 2012, 6). Thus, methodologically, transculturality becomes “an analytical tool to overcome an essentialist understanding of cultures, which is, if nothing else, helpful for a globalised twenty-first century” (2012, 70). For anthropologists, transculturality is a form of practice, which is continually produced and marked by plurality, entanglements, and discontent. As a heuristic concept, it is “good to think with” when trying to make sense of the ways in which knowledge is produced in cross-cultural encounters and in vibrant social spaces, or “contact zones,” frequently marked by disparate power structures (Pratt 2008). These multiple approaches to transculturality all share an emphasis on better understanding transcultural encounters in the globalized worlds we live in.

*Taming the Poisonous* contributes a specific example from the Tibetan world to studies in transculturality with a focus on how ideas of toxicity are translated, negotiated, and applied in different epistemological contexts. Anthropological studies on Sowa Rigpa increasingly view “translation of scientific epistemologies as practices between and across cultures” (Adams, Schrempf, and Craig 2011b, 1). In this book, Tibetan medical mercury refinement practices meet modern science in various ways. The terms modern or Western science are in themselves difficult to define. They are deeply embedded in the politics of knowledge shaped by the Enlightenment and colonialism (e.g. Prakash 1999, in Adams, Schrempf, and Craig 2011b, 2).

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9 Interview, Dharamsala, November 27, 2009. The two mercury studies are discussed in Chapter 7.

The widespread accepted dominance of science as the main framework in which to understand the world has its limitations when it comes to complex healing encounters in indigenous medical contexts.

Young Tibetans in India, like Sonam Yangdon in her opening quote above, who live in a pluralistic society in which they constantly bridge and translate between different epistemologies, wish for an exchange between Sowa Rigpa and science that is not one way, but is like "a bridge," leading to some form of "integration." As we shall see, the encounters between Tibetan medical and scientific paradigms of mercury toxicity offer ample examples of transculturality in practice: they are dynamic, political, and scatter in multiple directions, just like liquid mercury. They are continuously (re)shaped by religious ideas, well-established social networks, pharmacological practice, and varying expectations of what science could or should achieve for Sowa Rigpa.

The research presented here draws on more than two decades of personal involvement and studies with practitioners of Sowa Rigpa in India, the DFG-funded research on Tibetan pharmacological detoxification practices (2011–2015), a Lise-Meitner FWF-funded project on Tibetan precious pills (2015–2018), and my current FWF project on potent substances (2018–2022). My research focus has been specifically on the use of mercury in Tibetan medical traditions, its social history, its contemporary application in *menjor* practices, and the contested views of its safety. I followed these issues through twenty-one months of fieldwork between 2011 and 2017, during which time I conducted approximately 200 interviews as well as translated and analyzed relevant classical and contemporary Tibetan medical texts. My research traces the story of mercury back to the thirteenth century CE, when complex mercury processing techniques came to Tibet, largely from the Swat Valley regions of what today is Pakistan and northwestern India. I will analyze some of these texts with the following questions in mind: Which issues of toxicity are raised in Tibetan medical works? How did Tibetan authors describe the processing of mercury? How were mercury processing events embedded in political, economic, and religious life in Tibet? How has this changed since 1959, in exile in India and Nepal, and—more recently—with the global UNEP mercury ban to be implemented in India in 2020?

My approach has been to integrate Tibetan medical texts (translated and untranslated) into the ethnographic encounter, understanding cultures as constituting "themselves *in* translation and *as* translation," being the components as well as part of the results of translation processes (Bachmann-Medick 2006, 37). When it comes to translating medical meanings across different medical epistemologies and in anthropological contexts, theoretical analysis needs to be placed in a framework that grounds "interpretations in people's own forms of discourse and the concepts they use in their daily lives" (Wikan 1992, 464). Thus, an examination and analysis of contemporary uses of Tibetan medical texts and their translations and transmissions of meanings have been an integral part of my



ethnographic fieldwork, to arrive at a deeper understanding of Tibetan practitioners' discourses surrounding mercury toxicity.

Anthropologists have used texts and translated ideas across societies from the early days of the discipline, and "cultural translation" has frequently been included in the definition of their work descriptions, although often in controversial colonial contexts (see Rubel and Rosman 2003). While thinking through and working with translations of texts and meanings, I have been especially inspired by critical anthropological debates on cultural translations (Asad 1986) as well as new approaches in translation studies that have come to the forefront since the "translational turn" (Bachmann-Medick 2009). This has placed more emphasis on transculturality and shifting power relations between texts and ideas in their translation across cultures; in other words, it has shifted the focus to the politics of translation (e.g. Gal 2015; Hermans 2003; Tymoczko and Gentzler 2002). The trajectories, interfaces, and politics surrounding translation and power have been explored by Maria Tymoczko and Edwin Gentzler in their edited volume *Translation and Power* (2002):

Translation is not simply a process of faithful reproduction but invariably involves deliberate acts of selection, construction, and omission. It is inextricably linked to issues of cultural dominance, assertion, and resistance—in short, to power (Tymoczko and Gentzler 2002, cover).

How does power play a role in the translation and politics of toxicity? To give an example: the translations of toxicity, risk, and science have recently been explored in *Toxic Safety* (Cordner 2016), a study on the safety of flame retardants in the US. It shows how interpretations of science and risk assessments of toxic substances can vary among different stakeholders in pursuit of different goals. Sociologist Alissa Cordner introduces the notion of "strategic science translation," which she defines as "the process of interpreting and communicating scientific evidence to an intended audience in order to advance certain goals and interests" (2016, 915). Her approach explains how risk can either be downplayed or highlighted, depending on the group's interest and how they consequently translate scientific materials and data.

Linguistic anthropologist Susan Gal (2015) points to the need for reflexivity when writing about translational processes. Gal cautions: "It is useful to remember that translations [...] rely on ideological framings of comparison. And comparison—as many thinkers have noted—is always positioned, never politically neutral, never innocent" (2015, 236). At several places in this book, I reflect on my positionality as the ethnographer and my own embodied sense of toxicity, which, I am aware, has impacted my ways of translating between different epistemologies of poisons.

I also elucidate, across several chapters with numerous ethnographic examples, how acts of translation are embedded in transcultural practices

that reassert power and involve a certain cultural hegemony when dealing with mercury toxicity. This sometimes involves Tibetan medical practitioners explaining their views of toxicity and safety to international audiences (including myself), which are strongly influenced by biomedical science and prominent ideas of toxicity embedded in it. In some cases, Tibetan physicians and their institutes have employed science to valorize the safety of *tsotel*-containing precious pills, e.g. through controlled pilot studies (Sallon et al. 2006, 2017; see Chapter 7). We also find acts of translation in the ways in which Tibetan medical authors have described and authenticated medical lineages of mercury processing in their writings and across their complex socio-economic, religious, and political networks in which the *tsodru chenmo* practice has and continues to take place (Chapters 3 and 4).

Today, almost all forms of mercury seem universally considered poisonous, although to varying degrees (see Appendix A); therefore any analysis of a possibly cultural construction of mercury's poisonousness at first sight might appear ridiculous and could immediately be critiqued as relativist or charitable anthropology. This book takes a different angle, building upon and extending beyond what Talal Asad expresses well in his essay on "The Concepts of Cultural Translation." He writes:

My point is only that the process of "cultural translation" is inevitably enmeshed in conditions of power—professional, national, international. And among these conditions is the authority of ethnographers to uncover the implicit meanings of ["]subordinate societies.["] Given that that is so, the interesting question for enquiry is not whether, and if so to what extent, anthropologists should be relativists or rationalists, critical or charitable, toward other cultures, but how power enters into the process of "cultural translation" (Asad 1986, 163).

A major objective of this book is to show how power enters practices of transculturality through specific forms of the translation of toxicity in numerous contexts, and how toxicity and safety are expressed, negotiated, and defined by the various players (e.g. Tibetan doctors, medical institutions, international regulators, the ethnographer, biomedical researchers, chemists, etc.). I am interested in investigating how acts of translation are (re)created in ethnographic and other encounters and how they influence the ways in which Tibetan physicians, who have been exposed to biomedical ideas of toxicity, explain their usage and detoxification processes of mercury to different audiences. In light of a global ban on mercury and an influx of scientific studies that attempt to prove that Tibetan medicines are safe, Tibetan physicians have to negotiate a variety of toxicity epistemologies. How are the powers and dangers of poisons and the skills to tame them translated in this complex, contemporary situation? My argument here is that this translation process is largely about "taming." Not only do Tibetan physicians need to tame the toxic substance of mercury into

something beneficial, they also need to tame the biomedical understanding of toxicity and the global politics surrounding it to make sense of and to justify their continuous use of mercury in their medicines.

Moreover, I link acts of translation to forms of embodiment of toxicity and to power. How is the positioning of the various players (including the anthropologist) affected by the ways in which each actor has embodied individual perceptions of toxicity, and how are economic and power structures involved in their efforts to translate different cultural perceptions of toxicity and safety between them? My situatedness as a researcher, purposely staying upwind of the mercury fumes while observing certain processing techniques, configured a particular positionality during participant observation. I often asked myself how my judgment of safety would affect my presentation of the material and my translation of medical practitioners' ideas of toxicity. Would my own embodied sense of toxicity distort my translation of theirs? How would I turn these experiences into text?

What weaves each chapter of this book into a coherent narrative is an exploration of what is at stake in translating toxicity transculturally. With clear relevance beyond the Tibetan world, the book teaches us something about how, in a world facing global health and environmental concerns, we must address questions of toxicity and the safety of traditional pharmaceuticals in new and innovative ways. Such questions refer not only to well-established processing techniques of poisonous substances and their use in traditional medicines, but also to an increasing concern with the contamination of non-toxic raw medicinal substances through environmental pollution. It is my contention that a careful analysis of indigenous medical practice can add significantly to our understanding of how ideas of the poisonous are deeply embedded in religious and medical notions of toxicity, our own distinctive "poison culture" (Arnold 2016), and pharmacological practices over time.

After the chapter outline below, I introduce the fieldsite and methodological and ethnographic challenges in the field, which led me to reflect on my own embodied sense of toxicity.

## Chapter outline

Following this Introduction, Chapter 2 sets the scene with a Tibetan origin myth of poisons, which appears in several instances and with variations in Tibetan medical textbook chapters on poisons and mercury processing. This myth illustrates that in a religious and cultural environment where evil is not cast out or banished but actively engaged with and transformed, poisons are more easily considered living agents that have a social life of their own. How does a poison become an elixir? Why is *tsote/* considered the "king of elixirs" in Sowa Rigpa?

After introducing the sources of mercury, I take the reader through an ethnographic journey into the narrow market alleys of Old Delhi where elemental mercury is sold and traded in liquid form (including to Tibetan and

Ayurvedic physicians). I then analyze mercury-related technical terms and what is at stake when translating the meanings of terms such as safety, toxicity, poison, purification, essence, detoxification, processing, and taming in Sowa Rigpa socio-cultural contexts. The second part of the chapter thematically introduces the politics of mercury toxicity, including the cultural story of mercury's chemistry, mercury's different chemical forms and their varied toxicity, and global policies and regulations such as the UNEP mercury ban, which are based on the atomic model (see Schwabl 2013). I then present several existing toxicity studies of mercury in Tibetan and Ayurvedic medicines and discuss them in terms of the politics of toxicity.

Chapter 3 explores how political and religious climates have affected the *tsodru chenmo* practice, beginning in Tibet at the time of the Fifth Dalai Lama in the seventeenth century and extending into today's Tibetan exile in India and Nepal. The lived experience of Tibetan physicians processing mercury from the 1950s onwards—including once in a Chinese labor camp in 1977—is presented through ethnographic material, oral and textual accounts, and interviews. My analysis here builds on the theoretical approach of the "pharmaceutical nexus" by Petryna and Kleinman (2006), which addresses political, economic, and ethical dimensions of biomedical pharmaceuticals from production to consumption. I modify this approach to make it applicable to Asian medicines by including long-term historical processes and self-reflective elements of an embodied sense of toxicity (explained further below), which is conditioned by what I refer to as our own poison culture. My modifications to the pharmaceutical nexus as an anthropological approach to pharmaceuticals contributes new avenues of more self-reflective and historical inquiries when analyzing classical medical multi-compounds in Asian medicine, including the long-term use of processed poisonous substances.

I further analyze historical and contemporary *tsotel* events in the light of Tibetan social support systems, i.e. the priest-patron relationships, and show how these socio-political-religious networks involve elite financial support, specialized knowledge, and sometimes sectarian struggle, shaping the ways *tsotel* techniques have been and continue to be taught and practiced in exile. I also ask what happens if such support fails to materialize and if knowledge is not transmitted, offering historical and contemporary examples.

Chapter 4 centers on taming, secrecy, and knowledge transmission. It traces the appearance of mercury as a poison, a medical ingredient, and an antidote to poisoning in Tibetan textual traditions from the twelfth to nineteenth century and analyzes where we can place the *tsodru chenmo* practice in the debate on medicine between science and religion (Adams, Schrepf, and Craig 2011a; Gyatso 2015). The answer is neither simple nor straightforward, since when making *tsotel*, tantric notions of taming and medical skills of processing go hand in hand.

The central theme of taming and its surrounding secrecy has affected knowledge transmissions of the practice over time. This is contextualized

by the three key themes that appear in historical narratives on mercury knowledge transmissions from India to Tibet: poisoning, Buddhism, and the importance of lineage. Based on interviews, I discuss contemporary attitudes of knowledge transmission, especially in the publishing of *tsotel* manuals, and how physicians deal with the secrecy attached to these texts.

Small-scale mercury practices mentioned in Sowa Rigpa medical texts reveal a heterogeneous picture due to an active exchange of medical ideas between Tibet and its neighbors. I discuss why among the numerous mercury practices circulating in Tibet, the technique of making *tsotel*—which came to Tibet from the Swat Valley in the thirteenth century and has survived until today—is considered the safest and most prestigious mercury processing technique.

Taken together, Chapters 3 and 4 provide not only the first scholarly documentation of the history of Tibetan mercury practices, but also give insight into the social and political importance given to *tsotel* knowledge transmission and manufacturing events. They also illustrate how taming mercury involves the translation of economic and political prestige into medical practice, as well as the expansion of the cosmological and spiritual benefits of the taming process for the surrounding communities, their environments, and social relations.

The processing of mercury is a gendered practice, in that women have for the most part not been allowed to be present during *tsodru chenmo*. Chapter 5 explores why this has been the case and to what extent it is changing. I analyze the reasons behind the subdued role of women in Tibetan mercury processing and present oral histories of three exceptional women physicians who processed mercury despite these restrictions. This chapter also presents the Indic myth of the missing ingredient to process mercury, representing Śiva's semen: sulfur, which symbolizes the menstrual blood of his consort Parvatī. I discuss how as the arousing element, the female risks diverting mercury's potency away from the successful trituration with sulfur. How does this ambivalent role of the female as depicted in Sanskrit and Tibetan medical literature, translate into the restrictions currently in place at Sowa Rigpa institutions in India?

Chapter 6 explores how tantric ideas of taming parallel pharmacological processing techniques. How did physicians who made *tsotel* describe and perceive the transformative nature of mercury during processing through their own observations without chemical concepts and laboratory analysis? In analyzing how the "three poisons" of mercury are detected, tamed, and—after their transformation—tested for safety, I argue that the physician's sensory engagement with the transforming substance not only resembles early tantric Buddhist demon taming myths but are also at the core of the construction of safety.

This chapter also unpacks notions of risk and safety including questions of how evidence of safety is created and what the concept is based on. What are the signs of a successful processing into a "safe" substance? What protection measures do Tibetan physicians take when working with mercury

(ranging from wearing masks, drinking a lot of alcohol, and maintaining special diets)? How do notions of taming and risk assessment go together?

In Chapter 7, the translation of toxicity turns more global and also political in contemporary ethnographic contexts, in which Tibetan doctors articulate and translate their ideas of safety and toxicity in research projects, conference presentations, and in their responses to the UNEP mercury ban. What if terms such as toxic and pure, safe and unsafe, are interpreted differently in different local, global, and legal settings? Who defines what is toxic, and how is it supposed to be measured? What does this tell us about the cultural construction of toxicity, and how could global health advocates better understand indigenous conceptions of toxicity? The increasing global demands for safety in traditional medicines, and a series of scandals and publications on the toxicity of Ayurvedic, Tibetan, and Chinese medicine, led the main Tibetan medical institute in India, the Men-Tsee-Khang, to request foreign research teams to investigate the safety of *tsotel*. Two such toxicity studies were carried out in Dharamsala (Sallon et al. 2006, 2017). I sketch the contexts of these studies, and provide ethnographies of the interactions between foreign and Tibetan researchers during the second study. How did they translate concepts of toxicity to each other? How were the results presented during two conferences in Dharamsala? I show how in the effort to establish the safety of Tibetan medicines, the translation of toxicity between Sowa Rigpa and biomedical epistemologies were constantly negotiated. I demonstrate how these negotiations were influenced by certain expectations towards science that intersect with long-established social dynamics of support mechanisms that have been in place throughout the history of *tsotel* practices.

This chapter also addresses the ecological turn of the mercury toxicity debate and how amchi respond to mercury toxicity as an environmental problem. How does the concept of taming poisons translate into dealing with toxic substances that might creep into amchi's herbal medicines through environmental pollution, with no means to test for contamination of their medicines?

In the Conclusions, while examining the Tibetan material in a wider context and looking at the broader aspects of what constitutes poisons culturally and symbolically, both conceptually and in practice, I ask who "tames" whom through government regulations, local politics, and hegemonic concepts of safety? When do science and global regulations become "potent" and when are they "poisonous" for the continuation of traditional practice? Also, I look ahead at how a full implementation of the UNEP mercury ban in India might affect Sowa Rigpa practice. What alternatives do Tibetan physicians envision for their medical heritage as well as a future medical practice without refined mercury?

The findings of this book challenge the universality that is often attributed to accepted notions of toxicity in scientific thought today. They demonstrate how what is considered toxic is influenced also by the powers at play when translating varying concepts of toxicity and the social construction of

pharmacological ideas over time. Overall, this book asks for more nuanced analyses of notions of toxicity in traditional medical systems.

## The fieldsites

Dharamsala lies in the northwestern Indian state of Himachal Pradesh, which has a large Tibetan community of 13,701 Tibetans (out of 94,203 Tibetans living in India; Planning Commission 2010, 27).<sup>10</sup> The Tibetan enclave of McLeod Ganj in upper Dharamsala—a British hill station from the 1860s—is one of the centers of the Tibetan exile community in India and the home of the Fourteenth Dalai Lama, Tenzin Gyatso. He settled in McLeod Ganj in April 1960, and since then the area has developed far beyond a mere settlement for Tibetan refugees.<sup>11</sup> The hillside between Dharamsala and McLeod Ganj—an area called Gangchen Kyishong, briefly Gangkyi—was developed into the Central Tibetan Administration (CTA). Although not officially recognized by the government of India or any other government, the CTA has been overseeing the welfare of Tibetans in the over thirty-five settlements across India through its ministries and various administrative offices (Kauffmann 2015, 51–53). The Gangkyi area also houses the impressive Library of Tibetan Works and Archives (LTWA) and institutions that provide medical care: the Men-Tsee-Khang, offering traditional Tibetan medicines, and the Delek Hospital, offering biomedical care.

The Men-Tsee-Khang is the largest medical institution in Tibetan exile, having grown in size from a few huts in the 1960s to an impressive institution housing the main medical college, a pharmacy, a museum, several other departments, and a clinic (see Fig. 3).<sup>12</sup>

The Men-Tsee-Khang College, which educated approximately 263 Tibetan physicians between 1961 and 2013,<sup>13</sup> allows only a few foreign students per batch to enter the rigorous five-year program (largely from Mongolia, Russia, and Buryatia). The Men-Tsee-Khang, however, offers regular short-term introductory courses on Tibetan medicine for foreigners and has frequently sent medical teams across India and abroad. Consequently, the Men-Tsee-Khang has increasingly catered to foreign and Indian patients, not only in their clinics and with their pharmaceuticals

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10 We need to be aware of the fluidity of this kind of demographic data considering widespread migration of Tibetans abroad and the fact that Tibetans in India do not constitute a single unified community (Gerke 2012a, 61).

11 For more detailed descriptions of Dharamsala and McLeod Ganj by anthropologists see, for example, Hess (2009, 32–39) and Swank (2014, 12–16).

12 The history of the Men-Tsee-Khang and its contemporary developments have been studied in detail by Kloos (2008, 2010, 2015). On a history of the Men-Tsee-Khang in Tibetan, see Choelothar (2000).

13 According to the Men-Tsee-Khang website (MTK 2017b), 263 physicians and forty-seven astrologers graduated from fifteen medical batches and seven astrological batches in the past fifty-three years. As of 2013, 114 doctors and sixteen astrologers were working at the Men-Tsee-Khang.



Figure 3: View of the Men-Tsee-Khang complex from the circuit below the Dalai Lama's temple, overlooking the Kangra Valley, May 2016.  
Photo: Thomas K. Shor (Shor 2016/CC-BY-SA 4.0).

(Kloos 2017a), but also through their tonics, Sorig supplements, and other wellness products that are sold locally, in the over fifty branch clinics across India and Nepal, and online (Gerke 2012b).

The Delek Hospital has been catering to the biomedical needs of local Tibetans since 1971. Passing the hospital on my way downhill to the Men-Tsee-Khang, I frequently saw foreign doctors, with their white coats and stethoscopes, who had come to volunteer at Delek for a few months and contribute their expertise to the community's health needs. While at the Delek Hospital the medical epistemological approaches to health, disease, and the body differ considerably from the Men-Tsee-Khang, Tibetans utilize both institutions quite pragmatically, depending on their needs (Prost 2007). Delek Hospital provides facilities for lab tests, minor surgery, and emergencies, and organizes immunization and treatments for wide-spread infectious diseases such as tuberculosis, Hepatitis B, and gastroenterological infections. Patients suffering from those diseases might also go to the Men-Tsee-Khang clinics to have their pulse checked and receive a course of Tibetan pills. Patients with long-term chronic disorders often prefer the Men-Tsee-Khang. They also queue for the restricted distribution of precious pills, which they take as tonics on full and/or new moon days, in preparation for long journeys, or when they are seriously ill (Gerke 2017a; Sonam Dolma 2013). Most Tibetan patients have no problem using both facilities simultaneously.<sup>14</sup>

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14 This is similar to what I observed about Tibetan treatment choices in Darjeeling and Kalimpong (Gerke 2012).



The Men-Tsee-Khang and Delek Hospital also work together on certain occasions. During the first-ever study on mercury toxicity at the Men-Tsee-Khang (Sallon et al. 2006), a volunteer non-randomized sample of nine patients taking Tibetan medicines with processed mercury were selected from the Outpatient Department at Delek Hospital; they were taking biomedical prescriptions alongside traditional Tibetan medicines (Sallon et al. 2006, 406). Both medical institutions approved the ethical standards of the two *tsotel* studies according to the declaration of Helsinki; Delek physicians performed medical examinations checking for signs of toxicity, and the Delek laboratory performed some of the urine and blood tests (Sallon et al. 2006, 406–407; Sallon 2017, 319).

My field visits focused on Tibetan pharmacies working with mercury and on physicians who had practical experience in this field or knowledge of its history. Most of them at some point in their lives were trained at or involved with the Men-Tsee-Khang and later opened their own clinics and pharmacies in the area, or moved abroad (two were interviewed in New York). I met the leading physicians and their assistants of seven privately run pharmacies near Dharamsala, some of whom have made *tsotel* in the past but have decided to operate their pharmacies without mercury, and some of whom continue to use mercury sulfide in the form of roasted cinnabar, called *choklama* (*cog la ma*) or briefly *chokla* (*cog la*), as an ingredient and/or to coat their pills (see Chapter 6). Some use *tsotel* that was produced elsewhere. Their views appear throughout this book.

Apart from these private pharmacies, there are four Tibetan medical institutions operating in the Tibetan diaspora in India today, of which I visited the two that prepare *tsotel* and precious pills: the Men-Tsee-Khang in Dharamsala (founded in 1961), and the Department of Sowa Rigpa at the Central Institute of Higher Tibetan Studies (CIHTS) in Sarnath (founded in 1993). The Chagpori Tibetan Medical Institute (CTMI), founded in 1992 in Darjeeling, does not produce *tsotel*, but its founder, the Late Sampel Norbu Trogawa Rinpoche (1932–2005), prepared it twice in Ladakh (in 1994 and 2004, see Chapter 3). Some of this *tsotel* is still used in the rare preparation of precious pills at the CTMI pharmacy. The medical faculty at the Central Institute of Buddhist Studies (CIBS) in Choglamsar, Ladakh, is the fourth official Tibetan medical institution in India, but their pharmacy does not make *tsotel* (Blaikie 2014). CIHTS has a strong focus on university research, while the Men-Tsee-Khang is oriented towards producing pharmaceuticals, training doctors, and establishing clinics. The pharmacy of the Department of Sowa Rigpa at CIHTS produces *tsotel* and medicines solely for pedagogical purposes and for their single clinic on campus.

The Tibetan physicians I met in Kathmandu, Nepal, were either trained in Tibet pre-1959, at the Men-Tsee-Khang in Dharamsala, or the Chagpori Tibetan Medical Institute in Darjeeling, and have set up independent clinics with their own pharmacies. None of them makes *tsotel* today, but some (largely trained in Tibet) have experience in other mercury preparations. The oldest private Tibetan medical establishment in Kathmandu,

the Khunpen clinic, makes its *tsotel* preparation in its factory across the northern border, but is preparing precious pills in Kathmandu.<sup>15</sup> I also interviewed the leading expert on Tibetan medical literature in exile, Amchi Tashi Yangpel Tashigang, who is based in Delhi and produces precious pills without *tsotel* for the European market and with *tsotel* for his patients in Delhi. Most of these physicians and institutions making *tsotel* are introduced in Chapter 3. On historical questions I frequently consulted Tashi Tsering Josayma at the Amnye Machen Institute in Dharamsala.

#### DHARAMSALA AND THE MEN-TSEE-KHANG AS A FIELDSITE

Dharamsala, specifically McLeod Ganj, is known as a popular tourist destination and Tibetan Buddhist *dharma* hub among foreigners (Anand 2002). It has often been discredited by scholars as "an adulterated field of anthropological inquiry" (Prost 2006a, 235). Thus, I approached it as a complex fieldsite. The complexity arises from the multifaceted exchanges between Tibetans and foreigners, with many long-term foreigners living in the area to study Buddhism, Tibetan language, yoga, and meditation, or working as "volunteer tourists" with one of the many NGOs (Frilund 2018). My encounters with local Tibetans were constantly influenced by their frequent exchanges with foreigners, who often take on active roles as sponsors or as Tibetan Buddhist disciples, political activists, students, and researchers of all kinds—all of whom leave various impressions on local Tibetans and vice versa (Kauffmann 2015; Klieger 1992; Prost 2006a). With new encounters, I often felt put into a box shaped by previous experiences with foreigners, but long-term engagements with Tibetan physicians through my visits to the area since 2008 have helped me develop a certain trust and rapport over time. However, because the Men-Tsee-Khang has been increasingly flooded with young research students pursuing study abroad projects on Tibetan medicine, tighter rules have been put into place, which in turn inhibits access, even for senior researchers.

Dharamsala as the seat of the CTA also has a strong symbolic and political influence on Tibetan place and identity (Anand 2002; Diehl 2002), especially with the proximity to the Dalai Lama (Klieger 2002). Thus, scholars have rightfully critiqued Dharamsala as a hot spot for the construction of Tibetan culture, while other Tibetan communities remain understudied (Huber 2001). The encounters between Tibetans and local Indians have been both supportive and tense, as well as having affected migration, literacy, education, and Tibetan identity (Lau 2009; Swank 2014). The two distinct groups of Tibetan refugees that moved to India from their homes across the Tibetan plateau have also led to tension between factions of "old" and "new" Tibetans (DeVoe 2005). In Dharamsala, old arrivals mainly came from central Tibet to escape persecution between 1959 and 1962; "newcomers"—largely young Tibetans from Amdo but also from other

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15 Calum Blaikie, email communication March 16, 2016.

areas—arrived after 1986 when China relaxed its border controls. They typically look for education and a way to move further West (DeVoe 2005 in Swank 2014, 16). Their backgrounds and migration history are quite distinct and question simple definitions of what entails “Tibetanness” (Hess 2009) and being a refugee (Prost 2006a).<sup>16</sup> More recently, Chinese Buddhists have made Dharamsala their spiritual destination and—along with disciples from Hong Kong and Taiwan—have changed the image of foreign sponsors.

The Men-Tsee-Khang is an equally complex fieldsite for many reasons. Specific encounters between fields of science and medicine as steered by the Men-Tsee-Khang have played a strong part in the cultural and economic survival of Tibetans in Dharamsala (Kloos 2010, 2011, 2015; Prost 2004, 2008). After years of negotiating government recognition (Blaikie 2013, 2016), the development of Sowa Rigpa as a recognized “medical system” (Kloos 2016) has also impacted Tibetan doctors in the ways they reinvent Tibetan medical ethics and medical practice. This has become an important tool to preserve Tibetan culture through the “politics of compassion” (Kloos 2011, 2019). At the Men-Tsee-Khang, Tibetan medical students speak English, Tibetan, and Hindi, and while following the traditional curriculum of memorizing large parts of the *Four Treatises (Rgyud bzhi)* in Tibetan, they are also taught background knowledge in biomedical anatomy, chemistry, and biology. Practitioners are largely able to communicate with Tibetan, foreign, and Indian patients in all three languages and thus translate their medical ideas not only between languages but also between various cultures. Many Men-Tsee-Khang graduates lecture on Tibetan medicine to foreigners visiting Dharamsala or while abroad. This provides constant opportunities for complex encounters between various medical and scientific epistemologies across cultures. The ways they are understood, expressed, and negotiated by the physicians I met in the Dharamsala area are clearly influenced by the larger diasporic context of Dharamsala as an international hub and a center of Tibetan exile, and have shaped the data presented here. This defies simple generalizations of outcomes, but provides specific examples that speak to larger issues of encounters with toxicity in Asian medicines.

Thomas Kauffmann, in *The Agendas of Tibetan Refugees* (2015), explores the relationships between religion and politics in Dharamsala, to which the contemporary changes in mercury processing at the Men-Tsee-Khang provide a noticeable contrast. Kauffmann describes the current social relationships of gift giving and patronage (through the Tibetan priest–patron model), which have made Tibetans one of the most successful groups of refugees worldwide when it comes to procuring financial support over decades. As will become clear in Chapter 3, this priest–patron model was also

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16 For a recent study on the rehabilitation of Tibetan refugees and the development of the Tibetan diaspora and their financial aid see Kauffmann (2015). For a detailed study on the Tibetan diaspora see Hess (2009).

instrumental in the dissemination and preservation of mercury processing practices in Tibet pre-1959. The Men-Tsee-Khang in India has dislodged itself from this strategy, developing into a market-oriented enterprise that has allowed it to process mercury and produce precious pills independent of the priest-patron relationships that these practices previously were—and in some cases still are—embedded in. Nevertheless, as I will argue in Chapter 7, this social relationship dynamic affects the ways in which Tibetan physicians view science as well as their expectations of what science should achieve for Sowa Rigpa.

## Methodological and ethnographic challenges in the field

Each fieldwork situation poses its own challenges when it comes to positioning oneself as an ethnographer. My major challenges in the study of the processing of mercury have been threefold. The first was to collect data while respecting the secrecy surrounding the practice. The second was facing the general rule that women are not allowed to take part or even watch *tsodru chenmo* (which was the case at all Tibetan medical institutions, except one). The third challenge concerned my own culturally determined perceptions of safety and embodied sense of toxicity, which led me to be more reflective about my own poison culture. All of these issues required a certain reflexivity as an ethnographer and the employment of different strategies when it came to anthropological fieldwork methods, which are discussed in this section.

As a woman, I faced established gender barriers prohibiting me from observing mercury processing related to *tsotel*, and therefore my fieldwork did not include much traditional participant-observation. I was simply not allowed to be present, with two exceptions, described below. It is questionable whether even a male foreign researcher would have been allowed to observe *tsodru chenmo*, given the general secrecy surrounding *tsotel* preparations. The Men-Tsee-Khang has made *tsotel* six times since 1982, with only one occurrence during the course of this project, which was announced once the event was over in October 2014. How do you ethnographically study something you are not allowed to see?

Fieldwork often had the nature of approaching the topic through informal and semi-structured interviews with Tibetan physicians who themselves had made *tsotel* or other forms of processed mercury. I also steered discussions to the topic during lectures on mercury that I gave at the Men-Tsee-Khang in Dharamsala and at CIHTS in Sarnath. While attending two international conferences organized by the Men-Tsee-Khang, in 2012 and 2016, I documented how they publicly presented their views on *tsotel* studies and mercury safety debates. Despite the secretive nature of *tsodru chenmo*, its pharmacological achievement is rated so highly in Tibetan communities that this mercury practice featured prominently at both conferences, not only in the choice of invited keynote speakers, but also

during the press conference and in the public speech by the Dalai Lama. These public events thus became important fieldsites (see Chapter 7).

Collaborative event ethnography as an anthropological method was explored with three anthropology colleagues in Kathmandu, during a single event: a workshop with over forty amchi (from Nepal, Ladakh, and Tibetan regions in the PRC) on “Producing Efficacious Medicine: Quality, Potency, Lineage, and Critically Endangered Knowledge” (Blaikie et al. 2015). During this workshop (which was not attended by institutionally trained practitioners from India), the access to and lack of knowledge transmission of making *tsotel* revealed how certain amchi in the Himalayan periphery remain at the margins of such practices and thus have limited access to precious pills, while Lhasa is viewed by those amchi as the center of Tibetan medical knowledge and authority (2015, 190–191; see also Chapters 4 and 5). The Tibetan medical institutional perspectives in India were quite different, which I explored through interviews and by translating the biographies of Tibetan physicians, who were instrumental in the knowledge transmission of making *tsotel* in India (Gerke 2015a; see also Chapter 4).

This project did not involve fieldwork in the PRC, but I hope this book encourages future researchers to ethnographically study the many places where *tsotel* is now made in Tibetan areas of China.

#### EMBODIED SENSE OF TOXICITY

I felt fortunate to be invited to an Ayurveda clinic where I observed mercury distillation from cinnabar and the trituration of mercury with gold and sulfur. Moreover, a private Tibetan medical practitioner allowed me to document the roasting of cinnabar used for pill coating (Chapter 6). These were simple processing techniques not linked to *tsodru chenmo*, but they provided some first-hand experience of handling and transforming mercury. Even though I had translated relevant excerpts from Tibetan medical texts on mercury processing and had an idea of how they understood and practiced the taming of mercury, it was only when I was present when mercury was processed that I more fully realized the limitation of textual translations in cultural understandings of toxicity. Although I tried to be open minded, I found myself physically demonstrating my own embodied sense of toxicity by spontaneously holding my breath, stepping back, and staying upwind. This contrasted with the physicians’ own cultural habitus of toxicity when they touched and handled mercury and heated cinnabar without the safeguards modern science would deem prudent.

In September 2013, I visited the clinic and pharmacy of the Ayurvedic physician Vaidya Balendu Prakash, who had been one of the main guest speakers at the Second International Conference on Tibetan Medicine in Dharamsala in October 2012. I contacted him before the conference, requesting an interview, which he kindly granted and after which he invited me to visit his clinic in Dehradun. He graciously hosted my husband

and me for several days and showed us around his compound. He had prepared a display of ingredients that he used for his metal ash preparations, called *bhasmas*, and not only distilled liquid mercury from artificial cinnabar in the traditional way that his father had taught him (Fig. 4–8), but also showed us how he triturated the distilled mercury with gold and other substances (Prakash 2013). He had no obvious secrets with regard to ingredients and processing techniques, and both men and women were working on his compound. His wife had supervised the mercury processing in his family-owned pharmacy for years, just as his mother had helped his father in making *bhasmas* when he was young.

The following is a visual summary of an Ayurvedic form of mercury distillation, described in detail in Prakash (2013).

Balendu Prakash and I worked together on a publication on his family tradition (Prakash 2013), where he describes growing up in a family where liquid mercury and cinnabar were common, day-to-day ingredients in his father's clinic. Prakash remembers of the mercury distillation that,

the entire process was always conducted without using any masks or gloves, and all my siblings as well as family guests were exposed to this process. Neither my mother, Shashi Mukhi, who helped in the manufacturing of medicines, nor any of us ever felt uneasy about this; rather we were quite happy and excited to see our faces reflected in the shining mercury (Prakash 2013, 215).

When I saw Balendu Prakash scraping liquid mercury from a blackened clay bowl (Fig. 6) and later triturating mercury with gold and herbal juices, or pressing liquid mercury through a clean cloth into a bowl, I was struck by his physical expression of familiarity with handling the substance. I noticed him holding his breath or not answering my questions when his head was directly over the mercury bowl only a few times. Otherwise, he had no inhibitions in touching or handling mercury, while I was holding my breath, staying upwind when taking close-up photographs (Fig. 9).

Since he was open to discussing mercury, I also questioned him on issues of safety. He made his position quite clear:

You in the West are hypersensitive when it comes to mercury toxicity. But making such a hype against mercury is also a political statement to stop good things, including mercury medicines. I *know* mercury is toxic, and I *know* my medicines work and are safe. In between the two is the "don't know" part. I cannot explain what happens during processing, but I would be open to take part in any scientific study that wants to explore this.<sup>17</sup>

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17 Personal communication, Dehradun, September 19, 2013. Italics are my own and were added to highlight his vocal emphasis.



Figure 4: Pre-processed cinnabar is wrapped in a cotton ball (*kanduk*) and heated over a tray of cow dung with the help of a hand-operated bellows. It is then covered with a clay bowl and kept overnight, smoldering. Dehradun, 2013.  
Photo: Thomas K. Shor (Shor 2013 / CC-BY-SA 4.0).



Figure 5: Balendu Prakash opens the *Kanduk Yantra* (a ball-like apparatus to distill mercury from cinnabar) the next morning; the wrapped-up pre-processed cinnabar had smoldered inside the cotton ball all night. Dehradun, 2013.  
Photo: Thomas K. Shor (Shor 2013 / CC-BY-SA 4.0).



Figure 6: Mercury pellets form and collect at the bottom of the earthen bowl as Balendu Prakash scrapes the evaporated mercury dust off the sides. Dehradun, 2013. Photo: Thomas K. Shor (Shor 2013/CC-BY-SA 4.0).



Figure 7: The amount of mercury distilled through the Kanduk Yantra. Dehradun, 2013. This method extracts about 700 grams of mercury from one kilogram of mercury sulfide ore (Prakash 2013, 212). Photo: Thomas K. Shor (Shor 2013/CC-BY-SA 4.0).





Figure 8: The distilled mercury is collected and further filtered and processed before use. Dehradun, 2013. Photo: Thomas K. Shor (Shor 2013/CC-BY-SA 4.0).



Figure 9: Embodied sense of toxicity. The author is holding her breath while Balendu Prakash distills mercury. Dehradun, 2013. Photo: Thomas K. Shor (Shor 2013/CC-BY-SA 4.0).

## The ethnographic positionality of safety

Often, both Ayurvedic and Tibetan doctors perceived my positionality as a "Westerner" as someone who most likely would be critical of mercury. In several situations, I was expected to hold the position that mercury-containing medicine are unsafe (for example, my encounter with Dr. Khangkar, see Chapter 5). The opposite was the case with my long-term contacts among Tibetan physicians, who were familiar with my long association with Tibetan medicine. They expected me to show the world through my writing that their medicines were safe. At times, these opposing expectations caused conflicts between my trained ethnographic eye, my own perception of toxicity, and the responsibility I felt to point out occupational safety issues to physicians processing mercury. Not reacting required some training and conscious choices on my part, but was it ethical? Should I point out the dangers of mercury toxicity when and where I saw them and become an "advocate anthropologist"? (Hastrup and Elsass 1990). Hastrup and Elsass argue that "ethnography is legitimated by established canons of scholarship and the *creation* of knowledge, while advocacy rests on moral commitment and the *use* of knowledge" (1990, 302, original emphasis). My responses to a moral standpoint varied in different situations. For example, I had to wait a year for the opportunity to watch the preparation of roasted *chokla*, used as an ingredient and for coating pills, in a small, private Tibetan pharmacy (Chapter 6). When the moment finally came, my interest in understanding and documenting the technique outweighed the fear of exposure to mercury and sulfur fumes, which I partially escaped through holding my breath and keeping a distance. Although I was convinced of the dangers, I felt grateful for the physician's generosity but found it difficult to voice my concerns over the safety of his technique based on my "scientific" worldview.

I can testify from the ethnographic and writing process that my own poison culture deeply affected my ways of approaching mercury. I constantly had to question my own preconceptions concerning science, the atomic model, and UNEP regulations in order not to overlook what Tibetan physicians really meant by taming mercury. I want to emphasize that what I describe as embodied sense of toxicity is deeply interwoven with the power that emerges from cultural translations on poisonousness and thus contributes (often unconsciously) to our cultural constructions of toxicity. As we see in the descriptions of physicians processing mercury, what could also be called a cultural *habitus* of toxicity—or embodied sense of toxicity—contributes to the social making of toxicity as a cultural category. In the Tibetan example, the social propagation of toxicity as a cultural category develops in conjunction with medico-religious ideas of taming and their direct sense perceptions while touching and working with mercury. Only when I became conscious of my own acculturated instincts of mercury's toxicity through my spontaneous gestures of holding my breath, moving upwind, keeping a distance, and so forth, did I realize that our embodied

actions also define toxic substances as toxic in conjunction with authoritative statements (scientific, historical, political, or otherwise), thus defining their risks. In Chapter 3, I explore how this influences the ways researchers themselves become part of the pharmaceutical nexus of a drug.

Entering the field, I was aware that elemental mercury, particularly in the form of methylmercury, is one of the strongest neurotoxins known, and that exposure, especially to mercury fumes, can cause all kinds of toxicity symptoms (see Appendix A). Over the course of several challenging toxicity encounters, I developed an approach of sharing information, data, and knowledge on biomedical knowledge of mercury toxicity while also making a real effort to understand their views of toxicity. I did not go as far as giving mercury masks to physicians handling mercury, but I told them about their existence, their availability, and practicality. I also carried ideas of fume hoods into discussions, as an option that would allow their processing practice to remain traditional, but for the mercury fumes to be contained and thus provide more occupational safety and environmental protection (see Chapters 6 and 7). I shared printed information on the approaching global UNEP ban on mercury and its potential effect on Asian medicine, as well as published studies on lead and mercury contamination in Ayurvedic medicine. Their feedback furthered my understanding of their positions on safety and toxicity. What began as an ethnographic method—offering lectures, distributing articles, showing educational videos on how to handle mercury spills—turned not just into data, but into rewarding encounters of reciprocity as well.

In 2012, I presented a lecture to students and teachers at both the Men-Tsee-Khang in Dharamsala and the Sowa Rigpa Department at CIHTS in Sarnath on the historical medical use of mercury in Europe. The lecture focused on early mercury mining and signs of mercurialism among miners in Europe, the different chemical compounds of mercury, and the use of mercury in the treatment of syphilis, in other words, the European poison culture I grew up with and which had used mercury for centuries, for the most part in forms which caused more harm than benefit to patients (e.g. calomel, heated cinnabar) (Cunningham 2018a, b). It included images of the cinnabar fumigation therapies for syphilitic patients. The obvious message was that many patients were affected by severe mercury poisoning when inhaling heated cinnabar. The presentation concluded with a ten-minute video produced by The Nepal Health Care Waste Management Program<sup>18</sup> to teach nurses in hospitals how to safely clean up mercury spills from broken thermometers by evacuating the area, donning gloves and masks, opening windows, and disposing of the mercury as an extreme hazardous waste. The lecture also included a quote from the Tibet expedition report by Samuel Turner and his accompanying physician, Robert Saunders, who

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18 This video was also shown to the amchi participants during the Sowa Rigpa workshop in Kathmandu in December 2011, where we discussed mercury processing (mentioned in Chapters 3 and 4).

described the processing of mercury into a pill (possibly red mercury(II) oxide) to treat venereal disease at the monastery of Tashilhünpo in Tibet in 1783.<sup>19</sup> Saunders was impressed by Tibetan ways of preparing mercury and thought they were well equipped to treat venereal diseases (Saunders and Banks 1789, 100–102). I was curious to find out whether his description of the processing technique resembled any of the methods still practiced today. The results of these investigations—that mercurial medicines for treating venereal diseases in Tibet were very different from preparing *tsotel*—were published elsewhere (Gerke 2015b). More interestingly, the type of questions students asked after the lecture revealed the discrepancies between the different epistemologies at work among the younger generations of Sowa Rigpa students, who were exposed to both chemistry and Tibetan medicine, and the older generation of amchi.

At the Men-Tsee-Khang, students were interested to understand how mercury worked in thermometers and sphygmomanometers. They were keen to learn about the different levels of toxicity of organic and inorganic mercury compounds (see Chapter 2), a distinction not made in Sowa Rigpa. They were wondering whether and how mercury was detoxified for the European treatments of syphilis; there was noticeable surprise in the audience that it was typically administered without purification, i.e. as cinnabar fumigations.<sup>20</sup> One student asked, "Why didn't they purify the mercury?" In Sowa Rigpa, the rule is that mercury should never be given raw. Another student revealed his perplexity concerning the concept of mercury as an element (Hg) by remarking: "In Tibetan medicine we hold that mercury can be detoxified. But in modern science it cannot be detoxified because it is an element, and we learn in chemistry that elements cannot be changed." This comment illustrates how perplexing it is for young Tibetan medical students to align their traditional practices with their knowledge of chemistry, in which ideas of "taming" do not easily find a place.

At CIHTS, a student asked an intriguing question, having reflected on what purifying could possibly mean in the Tibetan tradition. "I thought that purifying mercury means to take out the mercury," he said. "But now I see that mercury is still there at the end, so what is purified?" In response, I explained the chemical meaning of what I thought paralleled Tibetan understandings of purification, the result of which is a largely stable and insoluble mercury sulfide compound. As I said this, I realized the limitations of my own chemical gaze that gave no attention to the other substances and techniques applied to the complex task of making *tsotel*, nor to the ways Tibetan physicians explain the transformation of mercury during processing, several of whom argued that "*tsotel* should not be reduced to mercury sulfide ash" (see Chapter 6).

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19 For the entire description see Saunders and Banks (1789, 100–102) and Turner ([1800] 1971).

20 There were many different mercury preparations in circulation in Europe, but purified mercury just referred to liquid mercury, which was drunk straight and acted by its weight (Cunningham 2018b, 184–185).

My aim in this book is to go beyond the chemical perspective and explain the central underlying ideas and the experiential epistemologies of Tibetan mercury processing. How did physicians who made *tsotel* describe and perceive the transformative nature of mercury during processing through their own observations without chemical analysis? In respect for the secrecy surrounding the *tsodru chenmo* practice, I will not describe in detail certain sequences of the processing, nor will I identify all the ingredients. My aim is to present the Tibetan medical rationale for taming mercury and how they determine the safety of different processing methods, relying on *their* texts and *their* terminology. This anthropological analysis of taming mercury does not exclude the biological effects of mercury in certain forms as a known neurotoxin (see Appendix A). In fact, the ethnographies show a very multifaceted picture of toxicity perceptions across the spectrum of Tibetan physicians interviewed. As we shall see, for practitioners in their medical practice and thinking within multiple epistemologies, toxicity takes on different shapes and hues depending on their individual engagement with mercury and their cultural translations of toxicity and ideas of safety.

#### SECRECY AND GENDER

Even though books and reprinted manuscripts explaining the process of *tsodru chenmo* have been more widely available in Tibetan since the mid-1980s (e.g. Dawa Ridrak 2003; Sönam Bakdrö 2006; Tashi Tsering 1986; Troru Tsénam 2001), Tibetan physicians and their institutions are largely secretive about it. There are several reasons for this. First, specialized skills are very selectively transmitted and are not easily shared with non-professionals. For example, Calum Blaikie (2014, 276) reports from Ladakh how Trogawa Rinpoche shared his handwritten book on *tsotel* but never let anyone “write anything down.” This way of passing on specialized knowledge is not only linked to the protection of trade secrets, but also to the tantric nature of the secret knowledge that is transmitted. As Tony Chui (2019, 100) succinctly states: “[...] tantric substances are believed to exhibit their full strength when used in a hidden way—in other words, the need for secrecy is to uphold the ‘potency’ of the medicine.” That said, not all ingredients used to make *tsotel* are considered tantric in nature, but as we shall see, the entire practice is considered a tantric revelation from the land of the *dākinīs*.

Second, the Men-Tsee-Khang in Dharamsala took a more conservative and secretive approach to teaching *tsotel* production techniques, especially in the early 1990s after Tibetan precious pill production was affected by concerns of counterfeit pills during a phase of weak administration with frequent change of directors (Kloos 2010, 88). Apparently, some Men-Tsee-Khang precious pills “began to disappear as personal gifts or on international tours” and counterfeit pills made from genuine precious pills, “crushed and multiplied,” were sold by private amchi “in exile-Tibetan

settlements, border areas, and in China" (2010, 88). Moreover, the Dalai Lama himself strongly criticized the profit-oriented marketing of Tibetan medical products through Tibetan physicians travelling abroad privately, selling medicines at high rates (2010, 89–90). When Tashi Tsering Phuri took over as the new Men-Tsee-Khang director in July 1994, the newly made precious pills of that year (they made 110 kg of *tsotel* in 1994), were packaged in plastic boxes, sealed with special hologram stickers, and their production and sales were tightly controlled (2010, 95). The counterfeiting of precious pills also led to tighter rules and restrictions around who was taught and what knowledge was shared.

Third, secrecy also has to do with Tibetan cultural ideas of how obstacles, *barché* (*bar chad*), can affect difficult undertakings. When a car accident happened during the first manufacturing of *tsotel* at the Men-Tsee-Khang in 1982, Tibetans at the Men-Tsee-Khang thought too many people were talking about *tsotel* preparation, thus causing *barché*. Nowadays, even though it is difficult to keep *tsotel* manufacturing completely secret, the Men-Tsee-Khang officially announces its occurrence only after it has been successfully completed.

Fourth, maintaining secret knowledge in Tibetan culture—even beyond the realm of medicine—often involves the exclusion of women. Taming mercury has such a strong gendered component that I devote an entire chapter to it (see Chapter 5). The ambiguous attitude towards women processing mercury is evident in the tantric symbolism of female menstrual blood and male semen as an equivalent to sulfur and mercury, respectively. Although sulfur is a powerful key ingredient when processing mercury, the presence of women is traditionally considered to endanger the process by "disturbing" and "arousing" the mercury. As a result, women are excluded to various degrees from touching and processing it. In Chapter 5, I trace the roots of this ambiguity in medical and Buddhist literature. Moreover, considering that half of current Sowa Rigpa medical students are women, I discuss gender inequalities in terms of how contemporary Sowa Rigpa institutions in India deal with the exclusion or selective participation of female amchi during *tsodru chenmo*.

Only at CIHTS in Sarnath were female students allowed to participate in making *tsotel*—except on the day when pre-processed mercury is triturated with pre-processed sulfur. The Sowa Rigpa Department at CIHTS has made *tsotel* only three times since its establishment in 1992, the last time in 2008. Gen Rinpoche Rakdo Lobsang Tenzin, briefly called Rakdo Rinpoche, now dean of the CIHTS Sowa Rigpa Department, invited me to observe parts of the process when I first visited the institute in December 2012, but they have not made *tsotel* since.<sup>21</sup> Rakdo Rinpoche holds more

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21 Twice the event was cancelled on very short notice, and to date I have not been able to witness the manufacturing of *tsotel*. Being a full-fledged central university, it has been difficult for the department to carve out forty days during the cooler winter months (the only time of the year when the climate supports the burning and cooking of metals) with their other university responsibilities.

liberal views on the participation of women in mercury processing, which influences the construction and transmission of secret medical knowledge in different ways (see Chapters 4 and 5).

These four issues surrounding secrecy (selective knowledge transmission, concerns regarding intellectual property, obstacles, and gender) impacted my methodology in several ways. During fieldwork, asking questions about past events made it easier for Tibetan physicians not to have to part with their (secret) knowledge and speak of events that they were involved in at present, but to talk with some distance about the practice as done in the past.

I prepared tables of key *tsotel* events in India (1982–2014), highlighting the places where it was produced and the names of doctors making it, along with the tradition or lineage they followed (see Appendix B, C). Sharing these tables with numerous Tibetan physicians and scholars during fieldwork revealed that they themselves often did not know much about other physicians and institutions making *tsotel* and were curious to hear from me who had made *tsotel* when and where. These encounters over time made them more comfortable to talk about their own experience with mercury processing practices. It also provided extensive data on the historical and political contexts of this practice, of which we know very little. Translating Tibetan biographies also allowed for a critical analysis of how contemporary knowledge transmission is created and linked to certain lineages and authoritative figures of the past as well as appraise the role contemporary biographies play in such lineage creation (see Chapters 3 and 4).

The secrecy surrounding the actual practice of *tsodru chenmo* has changed to some extent with modern Sowa Rigpa publications, largely coming out of Tibetan regions in the PRC, which describe the process of making *tsotel*, often with illustrations. Using these texts and published photos in discussion with Tibetan physicians, carefully asking specific questions, often resulted in more detailed and open explanations. It also revealed that many things remain unwritten in Tibetan *menjor* practice. For example, I translated and compared several textual accounts on the making of *kardül* (*dkar 'dul*) and *tsadül* (*tsha 'dul*), the shorter forms of mercury processing, and interviewed several Tibetan physicians about it in India and Nepal. I found that physicians prepared *kardül* and *tsadül* based on certain published formulations but changed their methods according to experience—without updating the literature (see Chapter 6). Because of the gender and secrecy issues, ethnographic research alone would have been limiting. Likewise, mere textual analysis would reveal a bizarre and partial picture of how mercury was used and processed and could easily lead to wrong conclusions about the toxicity of certain processed products since texts often differ from actual practice. Thus, combining texts with oral instructions through interviews and informal conversations was necessary to arrive at a more thorough understanding of Sowa Rigpa mercury practices.