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The Potency of Tradition: Turquoise, Coral, and Pearl in Sowa Rigpa

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The Potency of Tradition: Turquoise, Coral, and Pearl in Sowa Rigpa

Barbara Gerke

Turquoise, coral, rubies, diamonds, amber, and pearls are among the potent substances used in Tibet's medical traditions, specifically in 'precious pills' or *rinchen rilbu* (*rin chen ril bu*). Tibetan physicians use precious stones as medicines only after processing, without which none of them are considered medically beneficial. In this paper, I analyze three precious substances—turquoise, coral, and pearl—which appear together in many precious pill formulas and are processed using the same techniques. Based on textual analysis and interviews with Tibetan physicians in India, I address the questions: What makes these substances particularly 'potent,' expressed in the Tibetan term *nüpa* (*nus pa*)? How and why are these substances processed for use in medicines, and how is processing linked to *nüpa*? I argue that Tibetan medical practitioners authenticate their tradition of using precious stones as potent substances primarily through relying on authoritative texts

and oral transmission, since the direct sensorial understanding of the stones' *nüpa* is limited compared to the more sensorial assessments of the *nüpa* of plants through smell and taste. Findings show that potency of precious stones emerges as a complex synergy of interactions between substances and their socio-historical, religious, economic, and political values, which are all encapsulated in 'tradition.' In line with Neveling and Klien (2010) and Scheid (2007), I look at tradition as a fluid process of knowledge transmission over time, and analyze what happens when practitioners try to explain the rationale behind processing practices they still meticulously follow, and how questioning, especially by foreign researchers, might influence practitioners to call on biomedical science to explain tradition.

Keywords: Sowa Rigpa, currents of tradition, invented traditions, potency, precious pills.

Introduction: Knowing about the 'Precious' and the 'Potent'

On the one hand we attribute the knowledge of precious substances to the 'higher levels of mind'¹ by medical practitioners in the past, who were also Buddhist practitioners, wrote the texts we rely on, and created really good formulas. But on the other hand, we have to understand the substances themselves as having potency, since they were used in medicine long before Buddhism came to Tibet. We need to ask more questions to understand this. We take it as a given, that is our problem. (Dr. Tenzin Thaye, Dharamsala, March 2018)

I received this answer from Dr. Tenzin Thaye, one of the visiting physicians of the Fourteenth Dalai Lama and a senior physician at the Men-Tsee-Khang in Dharamsala, northwestern India,² to my question of how he knew that precious stones were therapeutically potent and could be used as medicines. He explained that he could not taste them the way he tasted plants. Thus, he relied on those masters of the past who possessed 'higher levels of mind,' and whose texts passed down specialized knowledge on the potency of 'precious substances,' in Tibetan called *rinpoché men* (*rin po che'i sman*).

In this paper, I explore three precious substances used in Tibetan medicine (Sowa Rigpa) that are deemed powerful and potent: turquoise, or *yu* (*gyu*), coral, or *juru* (*byu ru*), and pearl, or *mutik* (*mu tig*). My guiding questions are: What makes these three substances particularly 'potent,' as expressed in the Tibetan term *nüpa* (*nus pa*)? Why do they have to be pre-processed, using specific 'taming methods' (*dul thabs*), such as soaking, cooking, and washing, and how is their processing linked to *nüpa*?

My analysis focuses on the importance of 'tradition' for contemporary Tibetan physicians and how they tend to explain their traditional practices to foreign researchers. The interview quotes show how Sowa Rigpa experts in India are exposed to an increasingly modern scientific discourse, which makes them question their own textual knowledge and tradition, also in encounters with foreign researchers. This might easily give the impression that "they cannot explain what they are doing and why," while a careful reading of their responses implicitly includes fundamental Sowa Rigpa epistemologies of *nüpa* that explain the logic behind basic principles of their processing techniques.

Talking with Sowa Rigpa professionals in India, I found that sensory engagement through smell and taste, more typically used to assess the potency of plant material,

is limited when applied to gems and precious stones. Consequently, contemporary Tibetan physicians rely more on their texts when processing precious stones, attributing potency to tradition, since they 'cannot taste stones.' Moreover, socio-political, economic, and religious connotations of preciousness guide their assessment of these stones' *nüpa*. However, during interviews practitioners seem compelled to turn to biomedical science to explain tradition (Adams 2002; Kloos 2011, 2015). A scientific hegemony seems at play during such ethnographic encounters. I want to highlight that the physicians' answers call for reflexivity on part of the researcher, since practitioners might assume scientific research as the expected way to explain the processing techniques that are mentioned in the ancient texts they still rely on. In effect, they marginalize their own complex epistemology.

Nüpa as the Fundamental Capacity of Substances

In the Tibetan language, complex notions of potency are articulated under the umbrella term *nüpa*, which is frequently translated into English as 'potency,' referring to a substance's capacity to have an effect. *Nüpa* appears as a central and unifying concept of potency, around which other terms and classifications are established. For example, Sowa Rigpa practitioners talk about the 'potency of substances' (*rdzas kyi nus pa*) as one of the three key pillars of medicine making, called *menjor* (*sman sbyor*), along with the 'potency of mantras' (*sngags kyi nus pa*), referring to consecration, and the 'potency of dependent arising' (*rten 'brel gyi nus pa*), referring to the enhancement of *nüpa* through processing substances at auspicious times.³ In the *Four Tantras* (*Rgyud bzhi*), the principle Sowa Rigpa root text dating back to the twelfth century CE, the eight *nüpa* (*nus pa brgyad*) are sensorial parameters (heavy, oily, cool, blunt, light, coarse, hot, and sharp), linked to the 'six tastes' (*ro drug*) and the 'three postdigestive tastes' (*zhu rjes gsum*) of substances.⁴

An early eighteenth century key pharmacopoeia text refers to a different set of eight *nüpa*, which considers substances' morphological shapes and tastes along with religious notions of potency, such as the '*nüpa* of aspirational prayers.'⁵ In Nyingma ritual contexts, *nüpa* may refer to the powers inherent in deities and tantric practitioners, and often appears with *tu* (*mthu*), magical power, through which *nüpa* is conjured into substances in which it is not innate. *Tu* also appears in medical texts, for example on the potency of gems. In the seventeenth century, Dési Sangyé Gyatso writes in his *Blue Beryl* commentary on the *Four Tantras*, that gems combine "power and potency" (*mthu dang nus pa*), enabling them to treat all kinds of diseases (Sangyé Gyatso 1982: 12/9-11). *Nüpa* in ritual

contexts is also deeply linked to ideas of consecration through *jinlap* (*byin rlabs*), often translated as ‘blessings,’ which are ritually evoked and meant to transform substances, people, and places (see Sehnalova 2019). In sum, understanding *nüpa* in Sowa Rigpa requires a complex analysis of multiple components that stretch beyond a substance-based understanding of potency. It also speaks of a heterogeneous dynamic of oral and textual traditions that define today’s *menjor* practice.

This complexity is apparent in the processing of coral, pearl, and turquoise presented here. Their *nüpa* of coarseness (*rtsub*) needs to be made smooth (*‘jam*), which is achieved through soaking, and cooking them with natron (*bul tog*), salts (*tsha*), saltpetre (*ze tshwa*), urine (*dri chu*), and fermented barley beer (*chang*) (see Table 1). Plants used in the process are a type of fern (*re ral*) that is sweet and astringent, a type of gentian (*gang ga chung*), which is bitter and cooling, seabuckthorn (*star bu*), which is sour in taste with a sharp *nüpa*, and myrobalan (*a ru*). Collectively, these transform the ‘harmful/poisonous parts’ or *duk* (*dug*) of gems. These *menjor* techniques are known overall as ‘removal of harmful parts’ or *dukdön* (*dug ‘don*), during which rough and indigestible qualities of precious substances are made smooth for use in medicines (see van der Valk 2019; Tidwell and Nettles 2019). These practices are transmitted textually, orally, learnt manually as a craft, and are considered absolutely essential to make potent medicines.

This brief outline demonstrates that Sowa Rigpa parameters involved in *nüpa* and *menjor* are quite complex, requiring a deep understanding of Sowa Rigpa epistemology. Moreover, considering that the techniques of processing gems have been in place since the fourteenth century (or earlier), we are dealing with a knowledge system developing through long-term transmissions. This cannot be easily understood by a single individual since it presents the accumulation of knowledge over time, across various domains. Overall, this complexity should inform our assessment of what tradition means in Sowa Rigpa and how it is encountered during fieldwork. We are dealing with an intricate ‘network pharmacology,’ which is a recent and more sensitive approach to Asian medical traditions (Schwabl and van der Valk 2019; Tidwell and Nettles 2019). The responses of Sowa Rigpa experts presented here show that they most often do not assume foreign researchers to have in-depth *menjor* knowledge, and that they themselves might be unsure of the underlying reasoning behind their practices, which is understandable considering their long-term transmission. I found that, in effect, they frequently suggest that science could bridge the gap and explain their traditional techniques.

Asking Questions, Authenticating Traditions

I place my discussion within the debates on ‘tradition’ because my material raises questions on the status of tradition in specific knowledge transmissions of Asian medical practices. Since Hobsbawn and Ranger first introduced the term ‘invented tradition’ in 1983 in the context of constructing a nation, much has been written on this subject. At the time, Hobsbawn looked at ‘invented’ traditions in contrast to traditions that were ‘alive,’ a division that may not always hold considering the complexity described above. In the case presented here, the processing techniques are alive, but rarely questioned by practitioners. Notably, the ‘not-asking’ why certain things have to be done is in itself characteristic of their knowledge transmission.

Ranger revisited the idea of invented traditions in 1993, and used ‘imagined’ instead of ‘invented’ to emphasize the making of tradition as a more continuous process over time. The ideas of these two pioneers still play a role in anthropological analyses of traditions. However, scholars have redefined tradition as “an open and fluid concept that has been shaped by movements beyond borders, time and social entities” (Neveling and Klien 2010: 9–10). Neveling and Klien urge scholars to pay attention to “how the definition of and reference to traditions depend on the respective aims of and contexts in which given actors are embedded” (ibid: 13)—which, I add, includes the researcher studying the tradition. As we shall see, when medical techniques are still practiced but are difficult to explain, practitioners evoke tradition more strongly to authenticate their practice (and its potency).

Medical anthropologists have studied the invention of traditions largely in the context of newly emerging forms of traditional medicine, for example, as “a comprehensive strategy to reconstruct national identity,” in this case in Uzbekistan (Hohmann 2010: 129). Other Asian medical systems have been approached as ‘inventions’ during periods of nation-state building. For example, Janes and Hilliard (2008) discuss the invention of Mongolian medicine after the fall of the Soviet Union. The socio-political contexts in which traditional Mongolian and Tibetan medicine in the PRC have transformed since the 1990s reveal various degrees of national and trans-national inventions in their interaction with science, the state, and religion (Adams 2002; Janes and Hilliard 2008). Hsu explores Traditional Chinese Medicine (TCM) as an invented tradition during the 1950s–1980s, which is distinct from its later developments as a pharmaco-therapy (Hsu 2008: 467). Langford (2002) presents a nuanced study of how modern Ayurveda is re-imagined to treat (post)-colonial ills. Several of the above studies build on Hobsbawn and

Ranger's initial focus on nation building. They talk of loss, continuous transformation, invention, and renewal, but rarely of specific medical skills and their long-term transmissions, with some notable exceptions.⁶

For China, Scheid unpacks the 'tradition/modernity' dichotomy of the invented TCM system, where practitioners have presented TCM as traditional to a Western audience and at the same time invented new theories that made it appear more scientific (2007: 5). Scheid takes a fresh look at tradition "as an articulation between human beings and social practices that persists over time" (ibid), emphasizing its continuity and organic growth, particularly through plurality, intrinsic tensions, and differences—a dynamic for which Hobsbawm's 're-invention' metaphor is clearly insufficient (ibid: 8-9). Methodologically, Scheid's approach requires an overarching focus on both long-term history and contemporary agency, since both shape ongoing medical practice. To analyze such dynamics Scheid developed the broader concept of 'currents of tradition' (ibid: 10-13). This has already proven valuable in the analysis of continuity practices in Sowa Rigpa, even when applied only to one generation of practitioners (Blaikie 2013).

My examples reveal currents of tradition in long-term established formulas (since the fourteenth century) that in contemporary Sowa Rigpa contexts are called upon by practitioners to authenticate tradition rather than reinvent it. I will show that the ways in which practitioners place their faith in tradition, and at the same time call on science to explain it, reflects back on how and by whom the questions have been asked. Such research contexts are important to analyze when tracing contemporary currents of tradition back into the past—specifically through texts and orally-transmitted practices.

My research of Sowa Rigpa processing techniques of precious gems took place among Tibetans living in diaspora in India,⁷ where they have been increasingly exposed to ideas of science, standardization, and other forms of regulation while re-establishing Sowa Rigpa in exile (Kloos 2011, 2015, 2017).⁸ This paper's ethnographic focus is on northwestern India.⁹ While shifts in Tibetans' socio-political and economic situations in exile have led to re-inventing their identity and the image of Tibet (Anand 2000; Dodin and Räther 2001), the continuity of medical practice has shown that physicians and their institutions are deeply invested in Sowa Rigpa tradition. Clearly, Sowa Rigpa practices have never been homogenous, but represent a continuity of tradition with a strong reliance on lineage, authority, and place (e.g. Blaikie 2015). Tradition,

in Tibetan *sölgyün* (*srol rgyun*), is a 'continuous way' of doing something. It is frequently perceived by its practitioners as something 'stable' to be passed on through generations. This stability is ensured through lineage-based practice,¹⁰ albeit with openness to alterations.¹¹ For practitioners, such adherence to continuity can be reassuring but also challenging when explaining their practices in times of a global hegemony of science, through which they might also want to assert their modernity.

When looking at tradition it is crucial to understand what processes are involved in its transmission. Jansen, Luning, and de Maker in *Traditions on the Move* state: "Tradition [...] not only refers to knowledge that has been labeled in a particular way, but also to the mechanisms that serve to pass such knowledge on" (2009: vii). Dr. Tenzin Thaye's opening quote reminds us that traditional knowledge is often 'taken as a given,' and that it has in the past been perfected by accomplished teachers and is rarely questioned by students. On another occasion, while discussing medical history, he recalled his own experience as a student:

We never really ask these questions on history. Of course, we need to know the lineage, but that's enough. We are not taught that way, and it is not so important for us. When I was learning from the senior teachers, I was very young, and I simply did not think of asking these questions because our teachers were so qualified. They taught us like their sons and imparted everything they knew, like pouring all their knowledge into a vessel. In principle, students usually did not ask questions. (Dharamsala, May 2015)

Dr. Penpa Tsering who, like Tenzin Thaye, is Men-Tsee-Khang trained, but has established his independent pharmacy near Dharamsala, had a similar take on the issue:

Since ancient times, students don't ask questions to the teacher. Why? Because they have too much *dépa* [*dad pa*; faith, respect, confidence]. What the teacher says is real. Students also don't want to ask. So, the teacher also did not have the need to give a reason ... Those who made the formulas for the first time, they had a reason, they had to think before putting things together, how to remove the *duk*. They knew the reason. But, they did not explain it. Sometimes we can explain it with our own reasoning, because a substance we use during *dukdön* is good for poisoning ... but other times we can't. (Sidhbari, March 2018)

A mechanism to transmit knowledge based on ‘lineage’ (*rgyud*), through texts and ‘oral transmissions’ *men ngak* (*man ngag*), is an integral part of Sowa Rigpa learning (Tidwell 2017). Reliance on the textual transmissions and adherence to oral instructions by a qualified teacher is deemed necessary to pass on *menjor* techniques. This does not exclude a strong Tibetan tradition of debate. Janet Gyatso (2015) points out that while the necessity to pose questions and expect empirical evidence is in itself a key phenomenon of the Enlightenment, empirical inquiry and debate are evident in pre-modern Tibetan medical practice. As we shall see, particular practices of questioning can both reaffirm and destabilize the relationship Sowa Rigpa practitioners hold with their tradition.

We have to remember that embodying Sowa Rigpa knowledge through memorization of large amounts of texts and following the teachers’ instructions with great faith is a particular way of knowledge transmission. The potency of texts should not be underestimated. According to anthropologist and qualified *amchi* Tawni Tidwell, “text is enacted” until it becomes a lived experience for the medical practitioner. Tibetan medical texts “shape paradigms, mobilize discourse, provide primary sources and authority for knowledge and insight, and forge experience. Texts are living, breathing, speaking entities that teach, guide and direct” (Tidwell 2017: 13-14). They are often brief or written in verse (a mnemonic device), and actual skills of *menjor* practice are passed down directly from teacher to student.

In today’s Indian diaspora context, most students are educated in Indian English-medium schools before joining the Men-Tsee-Khang and have developed different approaches to questioning. They question their teachers more easily, as do foreign researchers. Practitioners thus find it difficult to explain tradition in some cases. As Dr. Penpa Tsering experienced:

Our students ask: ‘Why do you boil rocks?’ We have no answer but rely on our texts. *Dukdön* has to be done, but it is difficult to explain.
(Sidhbari, June 2017)

Sensing Preciousness

Processing skills are manifold, considering the variety of herbal, mineral, metal, and animal substances used in Sowa Rigpa. Practitioners engage different senses to identify the *nüpa* of substances. When compounding herbal substances, specialists largely taste herbs, evaluating their cooling or heating effects on the body and its pathways (e.g. Cardi 2005-2006: 103). While plants are more easily susceptible to the olfactory senses, precious medicines

or *rinpoché men* (which include precious gems, stones, minerals, and metals) often cannot be tasted. Dr. Tenzin Thaye explained what this means for the physicians processing these substances: “The potency of plants is easier to understand and explain because we directly rely on smell and taste. For metals and gems we have to rely more on our texts and the transmission of our teachers” (Dharamsala, March 2018).

Thus, the knowledge of *nüpa* of precious stones emerges from a synergy of texts, authoritative lineages, and passed-down skills. I argue that Sowa Rigpa’s textual tradition is called upon to a greater extent when the direct senso-experiential understanding of *nüpa* is limited; the legitimate use of precious stones as potent substances is justified through relying on textual and oral tradition. This is further supported by socio-economic histories of the stones’ preciousness (see below).

In Sowa Rigpa, so-called ‘precious pills’ or *rinchen rilbu* (*rin chen ril bu*) are famous for their ingredients of precious and semi-precious stones. The *Four Tantras* classifies eleven substances as *rinpoché men* (gold, silver, copper, iron, turquoise, pearl, mother of pearl, conch shell, coral, and lapis lazuli).¹² By the late seventeenth and early eighteenth centuries, we find their numbers increase considerably in Sowa Rigpa texts. For example, Deumar Tenzin Püntsook (born 1672) introduces fifty-six precious substances in his *materia medica* text, dividing them into forty-two non-melttable (gems and precious stones) and seventeen melttable substances (largely metals).¹³ Many of these substances came from outside Tibet and attest to a long-distance trade of these often valuable commodities used for jewelry (Fig. 1), amulets, statue making, ritual implements, clothing, as royal gifts, and so on. They also allude to what must have been an increased interest in using precious substances as medicines, ingesting their preciousness. Since they were expensive, precious pills remained largely an elite medicine (Gerke 2017).

For this study, I selected turquoise, coral, and pearl, because they appear to be the three most common *rinpoché men* used in popular precious pills.¹⁴ All three are mentioned already in the *Four Tantras* and even earlier. Moreover, they are processed using the same techniques. That preciousness could be ingested in the form of precious medicines was a notion widespread in early Buddhist Nyingma practices of ‘imbibing the essence’ (*bcud len*), or ‘nectars’ (*bdud rtsi*), in the form of all kinds of blessed pills that promise ‘liberation through tasting or eating’ (*myong grol*), also including ‘accomplished medicines’ (*sman grub*; see Sehnalova 2019). The precious substances under investigation here (turquoise, coral, and pearl) appear already in various Sowa Rigpa formulas

dating back to the eighth to eleventh centuries. Today, they are largely used in precious pills.¹⁵ Dr. Tenzin Thaye aptly summarizes the superiority of *rinpoché men* as medicines:¹⁶

The *rinpoché men* is considered the ‘king of pacifying [medicines]’ (*zhi byed kyi rgyal po*). If you have a serious and chronic illness, plants alone are not enough. You have to invite the king to treat it. We call it *loknön* (*log gnon*).¹⁷ It is like ‘double *nüpa*.’ If plants have half, then *rinpoché men* have double the potency. (Dharamsala, March 2018)

The contemporary PRC-based author Kelden Nyima presents the potency of *rinpoché men* as a mix of environmental and religious factors: precious substances are in contact with the five elements (water, fire, earth, wind, and space) for a very long time and thus have ‘superior power’ (*stob nus lhaq pa*) compared to medicines made from herbs, fragrant substances, and animals.

They [*rinpoché men*] not only have the *nüpa* of certain elements, taste and powers, but also hold the *nüpa* of interdependent arising, of prayer, of color, of rays, and so on, and thus, clear diseases and bad spirits, and when worn on the body they have the *nüpa* of protection.¹⁸

Kalden Nyima here alludes to various types of *nüpa* that are recognized in Sowa Rigpa, some of which were introduced above.

Rinpoché men as a category parallels Indian understandings of the broadly equivalent Sanskrit term *ratna*, which means “anything deemed to be the foremost of its kind” (Salvini 2016: 221). In Indian Buddhism, preciousness was attributed to jewels and precious metals early on, where they “appear as figures of speech, offerings, ornaments, magical implements, ideal landscapes and suggestive narrative elements” (ibid: 220). Indian Buddhism clearly influenced Tibetan notions of preciousness of gems and offered powerful Buddhist metaphors in the establishment of Tibetan ideas of their *nüpa*.¹⁹ However, as Dr. Tenzin Thaye, who himself is a practicing Buddhist monk, said in the opening quote: precious substances were used in Tibet long before Buddhism came to Tibet, and their substance-based potency should also be understood independently from religion.

Moreover, as we shall see with the example of old turquoise, elements from the early Tibetan empire (eighth to tenth centuries CE) also continue to impact how contemporary Tibetans perceive the potency of the turquoise stone. Below, I explore several avenues of these three precious substances from which ideas of their

properties and potencies emerged: their trade, economic value, exotic rarity, and so forth, followed by textual and ethnographic inquiries regarding their processing. I argue that these properties contribute to them being perceived as potent medicines.



Figure 1. A Tibetan woman wearing jewelry with turquoise, corals, and pearls.

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The Potency of Place and Preciousness

Carla Nappi observed in the Chinese *materia medica* text *Bencao* of the sixteenth century that:

There was a clear connection between an object’s worth and the place where it could be found or the land of the people who found it. Hence an object’s location was an important aspect of almost any discussion of its value, and an especially precious variety of a substance was usually distinguished, in part, by its geographic origin. Locality was also correlated with value in what might be considered a localized value system usually indicated by the term *guizhong* [precious].²¹ (2009: 115)

Similarly, the *Four Tantras*, its commentaries and *materia medica* texts, while abounding with information on the various types and geographic areas of where precious substances can be found, devote only one line to their therapeutic efficacy.²² The court physician of the Fifth Dalai Lama, Lozang Chödrak (1638–1710), when writing on precious substances “does not only mention the place of origin but the current price as well, mainly in comparison

with gold coins or tea” (Czaja, in preparation). One gets the impression that authors were more concerned with various sub-types of precious substances and their places of origin and trade. Tibetan authors also mention ‘rarity’ (*dkon*) as an important attribute of precious substances, entailing the difficulty of procuring a substance over long distances. Inviting skilled knowledge holders from afar has been an enduring practice throughout Tibet’s history. It was also a key characteristic of the cosmopolitan nature of life in Lhasa in the seventeenth century, when the Fifth Dalai Lama and his regent Sangyé Gyatso initiated a large production of medicines with precious substances (Sangyé Gyatso 2010: 327). Making precious pills was expensive and required wealthy patronage, which at times in Tibet’s past also involved sectarian struggles.²³ Clearly, perceptions of their potency emerged across political alliances and vast religious and economic networks, now further explored with three examples.

TURQUOISE

“Turquoise treats poisoning and liver fevers.”

*Four Tantras*²⁴

Turquoise, *yu*, is among the few *rinpoché men* found in Tibet.²⁵ The Medical House of Yutokpa received the name Yutok, meaning ‘Turquoise Roof’ (*g.yu thog*) after one of their lineage holders placed turquoise and gold on the roof of this famous Medical House.²⁶ Deumar lists turquoise right after diamond (*rdo rje*) as the “king of precious substances.”²⁷ *Yu* was traded, as is evident from its Persian name *firoza* (*puruzā* in Arabic, meaning victorious or prospering), appearing in Tibetan texts as *bai rwadza* or *sai rwa dza*.²⁸ Iranian culture impacted the Tibetan empire via trade from the seventh/eighth century onwards (Souren Melikian-Chirvani 2011). Turquoise was “an object of imperial interaction” with an active trade across Central and South Asia and the Near East (Khazeni 2014: 19-20). It is also the main precious stone directly linked to the pre-Buddhist vital force *la* (*bla*), going back to Tibetan imperial times.²⁹ Tibetans wear a *la yu* (*bla g.yu*) to protect themselves from a loss of *la*. A young Tibetan wearing a turquoise around his neck told me:

I am wearing this real old *yu*. I like it, because in the past during King Songtsen Gampo, the highest rank of the jewels is *yu*, that’s why we call him the ‘holder of *yu*.’ It is the highest rank of the gems. That’s why I wear it.³⁰

Tibetans describe turquoise as turning yellowish during *tripa* (*mkhris pa*) diseases, indicating the health status of its owner. Once given to a new owner, the color is said to restore itself (Walker-Watson 1983: 16-17). This ability

to change color has made turquoise an ‘alive’ stone, an apparent key to understanding its enduring perception as a potent stone. Once processed for use in medicine, turquoise becomes very light in color. Pale white is actually its inherent color, since turquoise exists largely of aluminum phosphate and is colored by copper (blue) and iron (green), which oxidize when heat is applied (Walker-Watson 1983: 16-17).

Tibetans prefer old turquoise for use as amulets and in precious pills, such as in Old Turquoise 25. Dr. Tenzin Thaye thought of old turquoise as a particularly *ripe* stone. ‘Old’ as compared to ‘new’ types of turquoise have truly ‘ripened’ (*smin*) in the bosom of the earth’s rocks, making them more blue and less rocky, and thus more potent. Dr. Choelothar, a senior Men-Tsee-Khang physician with long-term *menjor* experience, explained why the type of turquoise used in medicine should be old:

Old means it has been around for a long time, not recently mined, but a long time ago, and preferably worn [which turns the color more dark green]. The color of old turquoise is also different, the old one is darker, the new one is light. We prefer the old pieces, but nowadays they are difficult to get. (Chontra, May 2016)

There are also less complex formulas that include old turquoise as its main ingredient; all of them are primarily liver formulas (Dawa Ridak 2003: 65, 202). Old turquoise appears already as an ingredient in a liver formula in the *Medicine of the Moon King*.³¹ Unfortunately, these texts do not offer any explanation why turquoise is beneficial for the liver.³² Deumar describes various Indian types of turquoise, yet prefers three Tibetan types of old turquoise for medicines.³³ Nowadays, Sowa Rigpa practitioners in India buy turquoise stones from US mines in Arizona, considering Asian types difficult to identify since they are frequently fake.

CORAL

“Coral cures fevers of the liver, channel fevers from poisoning.”

*Four Tantras*³⁴

Red coral has long been valued in Tibet for its rarity and beauty, and it exemplifies how international trade exchanges influence perceptions of preciousness and potency. Coral was traded from the Mediterranean, South Seas, Ceylon, and Persia. Deumar lists several foreign and colloquial names of coral that testify to its long-distance sourcing (Tenzin Püntsock 2009: 90/17-19). Marco Polo mentions the monetary, decorative, and religious use of red coral among Tibetans in the thirteenth century (Polo

et al. 1845: 384). Political alliances were forged through contributions of red coral sent from Tibet to China during the Ming (1368-1644) and Qing (1644-1912) dynasties (Zolla and Del Mare 1997: 28).

Trade in coral to Tibet changed over time, which Tibetan physicians also documented in their texts. Deumar writes in the early eighteenth century: “Red coral came from Ceylon and Mukuta³⁵ and other islands. Nowadays, Kashmiri and Nepali traders will bring it in large quantity.”³⁶ This change might have been partially influenced by the British Empire taking over the coral trade from the Mediterranean around the turn of the eighteenth century (Lacey 2016). Coral was valued across the Himalayas. For example, in 1841, the Sikkimese Chogyal preferred payment in coral and other precious goods instead of cash from the British in return for their annexation of Darjeeling (McKay 2018).

The substance trade with Asia was also influenced by what was culturally considered ‘precious.’ For example, in Europe amber and coral were deemed semi-precious, while in China they were thought of as more precious than diamonds. Uncut gems were preferred in Asia, while in Europe cut gems were more highly valued (Lacey 2016: 96-97). In China, corals were considered ‘national treasures’ (*guobao*) for at least two thousand years, and during the Qing the coral trade was strictly ruled by the emperor, who in fact owned all coral imports (ibid: 97). Coral was a status symbol of the aristocracy, and it was supposed to have the power to attract auspiciousness and protect from unfavorable events. In Chinese, *bao* means both ‘treasure’ and ‘precious,’ and *baogui* means ‘precious’ and ‘valuable,’ something that is materially and emotionally valued (ibid: 96). The red color of coral played a role in it being associated with potency, fertility, vitality, longevity, and the *yang* essence. Tibet was likely influenced by perceptions of coral in China, and the Tibetan term for coral, *juru*, in older texts *jiru* (*byi ru*), shows linguistic parallels to the Chinese, *shānhú* 珊瑚. Deumar describes the nature of coral: “Because they grow on rocky outcroppings and sandy regions of outer ocean edges, their material substance is stone. However, because of their manner of growth, they are also referred to as a tree [-type substance].”³⁷

The main precious pill that is named after coral is Red Coral 25 (Jumar 25), used to treat nerve disorders (Sönam Döndrup 2006: 517/11). It contains coral, lapis, pearl, and oyster shells and twenty-one other substances. Coral is used in several precious pills, but not in ordinary formulas. Contemporary Sowa Rigpa experts in India source the less expensive cut pieces in various colors from Indian jewelers for their medicines.

PEARL

“Pearl prevents loss of cerebral fluid and is an antidote to poisoning.”
*Four Tantras*³⁸

The Tibetan term for pearl, *mutik*, is a loan word from the Sanskrit *muktā*. According to Deumar, various types of pearls were traded from India, Sir Lanka, and Hor (Mongolia).³⁹ Pearls were popular among Tibetan nobility, worn as head gear (Fig. 1), and decorated Buddhist statues and all kinds of artifacts. Ayurveda has a long tradition of using them in the form of *bhasmas* and *pisti*.⁴⁰ Chemically, the main mineral component is aragonite, a crystalline form of calcium carbonate. Aragonite is secreted by the mollusk, which forms the pearl inside the oyster shell (*nya phyi*). The shell is also used as a substitute for pearl.

Tibetan texts list six types of pearls known to be sourced from animals (elephant tusks or skulls, snake brains, and the stomach of a sea creature) and from plants (e.g. banana trees) in foreign lands.⁴¹ This parallels the *Ayurveda Prakāsa*, which describes the eight sources of pearl as oyster shell, conch shell, elephant, pig, snake, fish, frog, and bamboo (Murthy 2008: 368).

None of these types are of relevance in today’s Sowa Rigpa *menjor* practice in India, where cultivated oyster pearls are easily available. According to Dr. Choelothar, Deumar’s description of pearl types “read like the Indian mythological stories. They are part of our textual tradition to show how rare and special this medicine is. Here in India, pearls are easily available and not very expensive. For precious pills we use real pearls; but oyster shell is an acceptable substitute since it is made from the same matter” (Chontra, March 2018). At the same time, he emphasized that “when making precious pills, the real substances must be used, not substitutes” (ibid).

Pearl is used in many precious medicines in Sowa Rigpa, such as Mutik 6, Mutik 25, and Mutik 70 (= Rinchen Ratna Samphel). Dr. Penpa Tsering showed me three types of pearls he recently bought at Khari Baoli in Delhi, the largest wholesale market for medicinal raw ingredients in India. The smaller types were expensive (INR 40,000 /kg, about \$ 576/kg) and only used in precious pearl medicine. He would also add some of the larger pearls for INR 8,000/kg (about \$ 115/kg, see Fig. 2). For him, primarily the price and their rarity defined their preciousness for use in medicine; the more expensive the pearls, the more precious and potent the medicine:

We don’t know exactly how much difference of *nüpa* there is between [these two types] of pearls. We did not do any research. But I am sure, because the price is too high, too costly, so it has special

nüpa. It is rare and very costly ... because these little pearls are only used for medicine, not for jewelry. They are also used in Ayurveda and by Unani physicians. (Sidhbari, March 2018)

Synergies in Formulas

As we have seen, pearl, turquoise, and coral come from very different cultural and geographical environments with entirely different social and medical histories. Why are they grouped together in Sowa Rigpa formulas and also undergo the same processing techniques? What do these three substances have in common, beyond being classified as *rinpoché men*? In the modern Lhasa medical text book *New Dawn (Skya rengs gsar pa)*, they are all classified as having ‘astringent taste,’ *ro kawa (ro bska ba)*, and a ‘cooling nature’ (*ngo bo bsil*; RDLM 1985: 213/13-19, 232/14-16). Similarly, the Ayurvedic compendium *Aṣṭāṅgahṛdayasaṃhitā*, which was one of the foundational texts used in the compiling of the *Four Tantras* (Yang Ga 2010), mentions pearl and coral as both belonging to the “astringent group” of substances (Hilgenberg and Kirfel 1941: 61, verse 32). Their therapeutic benefits, however, remain quite distinct.⁴² Discussing the astringent taste of precious substances with Dr. Choelothar in Chontra, in March 2018, he explained: “When we cannot taste clearly the sweet, sour, bitter, or hot tastes, which are easily tasted, we generally say it is *ro kawa*. So, almost all precious substances are *ro kawa*.” Thus, *ro kawa* means not only ‘astringent taste,’ but also ‘having no taste.’

In the early Tibetan medical text *Medicine of the Moon King*, pearl and coral (as *byi ru*) appear together in four formulas

in different chapters.⁴³ Coral appears with old turquoise once in a formula,⁴⁴ and pearl appears with mother of pearl once.⁴⁵ In total, turquoise is listed twice, coral six, and pearl eight times. In the ‘Oral Instructional Tantra’ (the third part of the *Four Tantras*), turquoise and coral each appear eight times and pearl thirteen times. Together they appear in formulas three times, each for the treatment of poisoning.⁴⁶ These preliminary searches did not include any of the various synonyms used for these substances. Dr. Choelothar said about the way of combining ingredients (also discussed by Schwabl and van der Valk 2019):

We cannot explain why these three are used together in formulas, since they have distinct therapeutic benefits. This happens very often in Tibetan *menjor* practice. When you look up the single ingredient in the texts, you find it is linked to a specific therapeutic effect, but this ingredient might turn up in many formulas that are used for a very different illness complex. This is how substances work together. We would have to do a lot of research to explain this. (Chontra, March 2018)

This is again an example in which tradition legitimizes empirical *menjor* knowledge with a call for science to explain it, especially when encountering foreign researchers. Kloos convincingly shows how Sowa Rigpa has survived and thrived in exile through reliance on modern science and technology, moving from tradition to what he calls an “alternative, uniquely Tibetan modernity” (2015: 140). To date, such inclusions of science have largely focused on laboratory tests, clinical trials, the integration of basic biomedicine into the teaching curriculum, and the



Figure 2. Dr. Penpa Tsering showing me the larger and less expensive type of pearls, Sidhbari.

(Gerke, 2018)

application of biomedical diagnostics in clinical encounters. Overall, these approaches have helped to make Sowa Rigpa appear more scientific to the public, the state, and the global industry, which in the PRC has proven a suitable survival strategy (e.g. Adams 2002). In India, modernized Tibetan medicine has also shaped “an assumed ‘traditional’ exile Tibetan political and cultural identity” (Kloos 2015: 130). How does this expressed need for scientific research translate into Tibetan approaches to tradition in the context of *menjor* processing techniques of gems? Like most practical *menjor* knowledge, skills have been passed on orally, and relying on tradition also maintains the practices’ identity.

Processing Precious Substances

Turquoise, lapis lazuli, pearl, and so forth, all precious substances made of animate or inanimate, meltable or non-meltable elements, have to be separated and freed from *duk* [their harmful qualities]. Unless freed from *duk*, [they will cause] great harm. Zurkhar Nyamnyi Dorjé (1439-1475)⁴⁷

We are facing one problem: in our text it is said that you have to do the *dukdön* with turquoise, coral, and pearl. You have to boil them in water and in many other things, for two hours, like that, but how *duk* is removed through *dukdön* is not explained. That is difficult. Nowadays we cannot explain it. Why we are using *dumbu*, [*dum bu*, a kind of fern (see Table 1)] in the *dukdön* process? We can’t explain. In the text it is not explained. Dr. Penpa Tsering (Sidhbari, March 2018)

Precious substances need to be pre-processed. They cannot just be ground up and added to formulas. Raw substances have ‘harmful’ parts, collectively called *duk*, that have to be removed or transformed to become ‘beneficial’ or *men*. Practitioners follow traditional methods, but are often unable to explain them and consequently refer to scientific research as a possible solution to make tradition understandable, but without intending any changes to their traditional practice. As Kloos put it: “modern science is reinterpreted as an ornament (*rgyan*) to enhance the outward appearance of Tibetan knowledge without changing its inner substance” (Kloos 2015: 124).

While social scientists are trying to overcome the tradition-modernity dichotomy, it is perhaps ironic that, although *dukdön* techniques have not been scientifically researched in Sowa Rigpa, practitioners often state in ethnographic encounters that they would consider science a legitimate way to explain their practices (cf. Neveling and Klien 2010: 9; Kloos 2015). The idea of science legitimizing tradition has been observed in several contexts, and Sowa

Rigpa practitioners themselves are active players in this approach.⁴⁸ Dr. Choelothar explained the purpose of *dukdön*:

Precious substances are ‘rough’ (*rtsub*) by nature and have to be made ‘smooth’ (*jam btsal*) in order for us to digest them in the medicines. They have *duk*, but it means they are rough to digest, not that they are poisonous. We cannot really explain these old methods and why exactly these substances are needed. This should be researched. It is our ancient tradition and we follow it. (Chontra, March 2018)

Table 1 compares an early fourteenth century *dukdön* technique for turquoise, coral, and pearl by Zurkhar Nyamnyi Dorjé with the nineteenth century instructions by Kongtrül Yönten Gyatso (1813-1899) of eastern Tibet, and a twentieth century description by the famous physician and scholar Khempo Troru Tsénam (1928-2004), who taught the making of precious pills across Tibet after the 1980s. As is characteristic for Sowa Rigpa works, we find considerable intertextualities. As Table 1 shows, authors have copied the sections on processing from each other for the past six hundred years with little variation in terms of basic techniques. Toru Tsénam’s modern text book instructions are more detailed than those of his predecessors, but the list of ingredients has, for the most part, remained the same. Dr. Penpa Tsering explained the dynamics between textual and oral transmission, which clearly define the ways tradition is called upon in contemporary situations:

We consider it very important to carry out the *dukdön* according to our texts and the teacher’s *laklen* [*lag len*, practical experience]. We cannot only rely on the teachers; they have to point out the method in one of the authentic texts and add their *laklen* during practical training. Sometimes, you even get a special [secret] oral instruction, *men ngak*. The texts do not give all these details. Sometimes, the *laklen* is difficult to explain, especially with precious stones, because how can we tell the change before and after processing? The stone looks almost the same, maybe slightly different in color. We should do scientific research to be able to explain to our students how this works. (Sidhbari, June 2017)

While Dr. Penpa Tsering calls again for scientific research, at the same time he offers perceptual cues of how practitioners traditionally knew that the *dukdön* was achieved: the color of the precious stones changed. What in the past was based on careful observation has been replaced by modern metrics. Dr. Choelothar explained that the textual phrase “the time it takes to change the color of coral” is a vague textual time indicator; now practitioners follow clock time. Dr. Penpa Tsering agreed:

We boil the precious stones by hours, not by seeing how the color changes as is mentioned in some older texts. You cannot see it clearly. Some pieces of coral are very red, some are whitish, they come in many different types of color. (Sidhbari, June 2017)

Recent medical texts place more emphasis on writing down techniques, which previously were transmitted orally. For example, Nyima Tséring (2009: 25-26) adds specific amounts of ingredients and hours of their cooking time, which were earlier more loosely quantified as, for example, “the time it takes to boil a soup” (*khu ba thon nges skol*; see Table 1). Currents of tradition are clearly constantly being reshaped in practice and modified by personal experience. Historian of science Pamela Smith points out that textual time measurements reveal a kind of “artisanal epistemology” (2004: 59), and that we should take seriously the “lived theory” (2010: 48) of early artisans and the underlying principles of their workings with materials. She states: “The terms of these measurements sound unfamiliar, as they attempt to put into words the experiential and sensory knowledge of artisans that was almost always left unarticulated” (ibid: 32). One indeed has to dig deep into the texts and practical skills to unravel Sowa Rigpa ‘artisanal epistemology,’ which too easily gets ignored by calls for scientific evaluation.

Discussing the *dukdön* with Dr. Choelothar, he explained:

The general *dukdön* of turquoise, pearl, and coral is the same. You boil it four to five hours in water with *aru* [*a ru*, myrobalan]. Then you have to throw away the water and wash [the stones] many times. The water is so full of *duk* that if you give it to a dog it will be drunk and fall asleep. You also have to add *zétsa* [*ze tshwa*, saltpeter or potassium nitrate], *aru* and *rerai* [*re ral*, a type of fern]. My teacher told me that *zétsa* is a *must* in processing gems. It is the main substance that makes the precious gems ‘smooth.’ After *dukdön* the color of the gems will be light, turquoise will be very light, and red coral will be very light, and the pearl which sometimes has strains of color will be light, but not bright. (Chontra, May 2016)

Here, oral transmissions include considerable experiential knowledge such as subtle color changes. The tactile sensory modalities involved in perceiving the changes in color or making a substance ‘smooth’ are certainly not easy to learn and articulate. But they follow their own logic.

Dr. Tenzin Thaye explained that most of the plants and minerals used to process gems are in themselves known to treat poisoning and take out *duk*. Their properties have a ‘smoothing’ effect on other substances that are ‘rough’

in nature. Dr. Penpa Tsering explained why the process is not easy to understand or demonstrate:

Some of the ingredients are themselves antidotes to poisoning. For example, when we do the specific *dukdön* of lapis lazuli [*mu men*] we make a fire from *kyerpa* wood [*skyer pa*, a type of barberry] and roast the stones in pig fat over this heat until they turn blackish.⁵⁰ Both pig fat and *kyerpa* have the *nüpa* to remove poisons. So, in this way we can explain the reasons a little bit. But this does not apply to all ingredients. [...]. The reasons are not given clearly in the text. Practically, we cannot understand the difference before and after *dukdön*, how it has affected the stones. In the text it tells us that the *nüpa* has become ‘smooth’ and won’t harm the body. But practically, we should see or show the difference of the *nüpa*. We cannot show that [...]. We should test it scientifically. We follow the texts and our teacher’s advice. (Sidhbari, June 2017)

My discussions on pre-processing precious substances present the *menjor* knowledge of Men-Tsee-Khang trained physicians in India. All three physicians interviewed studied under the same teachers. Their view represents the institutionalized Sowa Rigpa training at the Men-Tsee-Khang in Dharamsala since the 1990s. Small-scale, lineage-trained *amchi* across the Himalayas also use precious substances in their medicines. For them, it is difficult to process the small amounts of precious stones required for their cottage industry production. I discussed this with Amchi Tenzin Bista from Dolpo in Nepal during the ICTAM conference in Germany, in July 2017. On pearls he said:

We do not need a lot of pearls for our medicines. We buy them pre-processed from the Ayurvedic pharmacies in Kathmandu as and when needed. Their purified pearls come in the form of a paste. They have a long tradition of purifying pearls, and we trust their processing.

Here, we have an example of borrowing across traditions in the absence of having access to one’s own. These practitioners base their trust on the long duration of an established tradition, despite processing techniques being quite different. It shows that processing skills and practices change with the environments and circumstances practitioners find themselves in. Depending on context, the processing of precious substances in Sowa Rigpa is neither standardized⁵¹ nor in practice solely based on traditional Sowa Rigpa techniques. It will require further fieldwork to understand this heterogeneity and how tradition is understood in each case.

Conclusion

In this article, I discussed the use of three precious substances in Sowa Rigpa—turquoise, coral, and pearl—and their value as rare, precious, and powerful substances. Preliminary textual analysis shows that turquoise, coral, and pearl were already used as medicines during the eleventh century or earlier, often in combination, and for various conditions. Out of the three, pearl appears most frequently in formulas, followed by coral, and then turquoise. Reasons for this are difficult to establish and might involve therapeutic demands, availability, price, or preferences of wearing these precious stones rather than crushing them into medicines. Even though gems are appreciated and held efficacious for their beautiful colors when worn, they become colorless during processing.

It appears that potency, encapsulated in the umbrella term *nüpa*, is also defined through rarity, price, and cultural preciousness. Potency is referred to in numerous medico-religious as well as socio-economic contexts, and forms an integral part of the currents of Sowa Rigpa traditions. For example, economic value impacted Dr. Penpa Tsering's choice to purchase expensive types of pearls—perceived as more potent—for his precious pills.

The taste categorization of precious stones as 'astringent' in post-twelfth century Tibetan medical texts was possibly influenced by a similar categorization found in the *Aṣṭāṅgahrdayasamhitā*. Since stones cannot be tasted, astringency was translated to me by practitioners basically as 'having no taste.' However, the absence of a taste is also a sense perception, though limiting when compared to the more accessible olfactory perceptions of plant-based *materia medica*, where *nüpa* is largely, though not exclusively (see van der Valk 2019), evaluated by taste. Consequently, in evaluating the *nüpa* of precious stones, practitioners rely to a greater extent on texts along with their teachers' transmissions, as well as long established cultural and economic values attributed to precious stones. I conclude that a wider spectrum of aspects beyond taste and smell needs to be considered when researching the *nüpa* of precious substances in Sowa Rigpa, also including therapeutic signals that physicians receive from their patients when using precious medicines in clinical practice.

I am aware that practitioners might not always articulate the full range of their perceptual knowledge on the potency of substances they work with. Some of it could be retrieved through further textual study of the complex tactile and sensory modalities involved in *nüpa*, such as the modalities of the elements forming certain tastes, as explained in the *Four Tantras* and its commentaries.⁵²

My translated examples of the general processing techniques for turquoise, coral, and pearl show that methods and ingredients have remained largely unchanged since the fourteenth century (although substance identifications might vary over time). They illustrate not only the extent of intertextuality in Tibetan medical writing, but also represent living currents of tradition, in which oral and textual knowledge, lineage and authority, and manual craftsmanship continuously emerge from and merge into actual practice. Tradition is called upon by contemporary practitioners to authenticate today's practice because medical knowledge and skilled practices that are transmitted over a long time are often difficult to explain, especially in a contemporary research environment dominated by biomedical science. More fieldwork is required to further understand how practitioners' trust in science versus tradition is shifting. How does this dynamic impact the continuation of practice in contemporary diaspora environments, where science is used as a tool to "achieve international recognition, ensuring the long-term survival of Tibetan medicine" (Kloos 2015: 126)?

Looking carefully at the underlying Sowa Rigpa epistemology, one detects reasons why certain substances are used during *dukdön*, considering their anti-poisoning properties and abilities to 'smoothen' the 'rough' qualities of other substances. Biomedical science easily reaffirms its hegemony in a situation where the tradition's own epistemology and foundational texts seem ancient and foreign, and 'smoothing a roughness' of a substance is not considered an adequate explanation.

Many of the quotes presented here also raise questions on the limits of anthropological and textual understandings of living Asian medical traditions since the currents of knowledge transmitted over long periods of time are so complex, fluid, and dynamic. Scheid's conclusion that "one of the most important tasks faced by any such tradition is to create and maintain identity, and that history is one of the key tools employed for this purpose" (2007: 384) rings true when Sowa Rigpa experts call upon their historical texts in an attempt to authenticate medical knowledge of the past, effectively attributing potency to tradition itself.

Table 1. Processing turquoise, coral, and pearl, according to three Tibetan sources.

<p>Zurkhar Nyamnyi Dorjé Fourteenth century Text: <i>Bye ba ring sel</i> (1993: 289/5-11)</p>	<p>Kongtrül Yönten Gyatso Nineteenth century Text: <i>Gso rig zin tig yang tig</i> (2005: 99/5-13)</p>	<p>Troru Tsénam Twentieth century Text: <i>Bod kyi gso rig kun btus</i> (2011-12, vol. 57: 690/12-18, 691/1-5)</p>
<p>Take the precious substances [you want] to process. (<i>rin chen gang g tong de dang</i>)</p>	<p>[Take] old turquoise, coral, pearl, etc. whatever you [have to process], just loosely crush [them]. (<i>g.yu rnying bye ru mu tig sogs gang yin khrol tsam brdungs pa'i</i>)</p>	<p>First, except for the two, diamonds and amber, all other precious substances are first cleaned of dirt in order to compound them. Each precious substance is first boiled for a long time in water [soaked with] small cardamom or in natron water, then washed till clean. Then, pearls, turquoise, coral, mother of pearl, lapis, etc., are crushed individually with a pestle. [...] With regard to grinding it coarse and fine: It is useless to grind it very fine like mustard seeds, since it will be wasted during the washing and cooking. (<i>dang po/ pha lam dang/ sbur len gnyis las gzhan pa'i rin po che rnames thog mar sngar gyi dreg pa sbyong phyir rin po che so sor sug chu'am bul tog gi chur yun ring btsos nas bkru bshal dag par bya/ de nas mu tig g.yu/ byu ru/ nya phyis/ mu men sogs rin po che rnames so sor khram khrum brdungs/ de'ang rtsing zhib nas dang 'bras/ yungs dkar tsam las shin tu zhib na bkru bshal skabs chud zos su 'gro bas de las zhib mi nyan/</i>)</p>
<p>[add] saltpeter of equal weight [of the precious substances], (<i>ljid mnyam pa'i ze tshwa/</i>)</p>	<p>[Take] salt and saltpeter of equal weight [of the precious substances], (<i>ljid dang mnyam pa'i tsha la dang ze tshwa/</i>)</p>	<p>Mix the individual amounts according to the measurement. At the same time, add salt and saltpeter of equal weight [of the precious substances], (<i>so so'i mang nyung sbyor tshad ltar phyogs gcig tu bsdoms pa'i ljid dang mnyam pa'i tsha la dang ze tshwa/</i>)</p>
<p>[Add] <i>ldum bu re ral</i> [a type of fern, sweet and astringent, that is used to treat meat and compounded poisoning], the essence of <i>be ljang</i>, [and] gentian [a bitter, cooling plant, antidote to poison], [of these] three, [take] a third, (<i>ldum bu re ral/ be ljang bdud rtsi/ gang ga chung gsum/ de'i sum cha/</i>)</p>	<p>[Add] a third of the saltpeter [amount] of superior <i>be ljang re ral</i>, if not available then <i>ldum bu re ral</i> and gentian, (<i>ze tsha'i sum cha be ljang re ral mchog yin kyang ma rnyed na ldum bu re ral dang gang ga chung/</i>)</p>	<p>[Add] a third of the precious substance [amount] of the essence of <i>be ljang</i> [and] <i>be ljang re ral</i> and gentian, (<i>rin po che'i sum cha be ljang bdud rtsi ste be ljang re ral dang gang ga chung/</i>)</p>
<p>[add] a little musk for fragrance, [add] genuine pulverized salt, in equal amounts, (<i>gla rtsi dri thon tsam/ tsha la dul ma dngos dang mnyam/</i>)</p>	<p>quite a bit of syrup of [the sour berries of] seabuckthorn. (<i>star bu'i khaṇḍa mang tsam/</i>)</p>	<p>[and] quite a bit of syrup of [the sour berries of] seabuckthorn. (<i>star bu'i khaṇḍa mang tsam/</i>)</p>

Table 1. (cont.)

<p>golden colored myrobalan, <i>(a ru ra gser mdog)</i></p>	<p>Mix it with chebulic myrobalan [without removing the seeds],⁵³ and <i>(a ru ra rus pa bcas pa dang/)</i></p>	<p>Mix it with chebulic myrobalan [without removing the seeds], and <i>(a ru ra rus pa dang bcas pa dang/)</i></p>
<p>[sprinkle] the ash of cowry shells, [as if you would add] a little salt. <i>('gron thal tsha 'debs tsam/)</i></p>	<p>[sprinkle] the ash of cowry shells, [as if you would add] a little salt. <i>(mgron bu lde can gyi thal ba tshwa 'debs tsam/)</i></p>	<p>[sprinkle] the ash of cowry shells, [as if you would add] a little salt. <i>(mgron bu lbo can gyi thal ba tshwa 'debs tsam/)</i></p>
<p>common seabuckthorn, <i>(star bu che na dga'/)</i></p>	<p>Add a little musk for fragrance. <i>(gla rtsi dri thon tsam bcas)</i></p>	<p>You must add a little musk for fragrance. Those ingredients are like a supplementary procedure. <i>(gla rtsi dri thon tsam bcas dgos/ de rnams kyi sbyor tshad lag len zur gsal ltar)</i></p>
<p>[and] add the urine of an ordained monk or an eight-year old to the liquid. <i>(lo brgyad pa'am dge slong gi chu la khu ba byas la/)</i></p>	<p>Soak it half a day in urine of an eight-year old, boil until the coral color has changed. <i>(lo brgyad dri chur btab la nyi ma phyed tsam mam bye ru mdog 'gyur tsam du btso/)</i></p>	<p>After a while, pour [everything] in the urine of an eight-year old or, if you cannot get it, mix it with pure water, boil it in a little bigger vessel for the amount of time it takes to boil a soup.⁵⁴ Throw out the liquid twice; drain the essential liquids through a filter, and pour the precious substances into a small cotton sack,⁵⁵ bind it tight and gradually grind it completely and boil [in] the medicinal liquid until the coral color has changed. <i>(thang tsam brdungs nas lo brgyad dri chu rkyang pa'am/ ma 'dzom chu gtsang dang bsres par btab ste snod che tsam zhiq tu khu ba thon nges skol/ khu ba thengs gnyis phyung te tshags su drangs pa'i khu ba dwangs ma'i nang du rin po che rnams ras khug nang blugs te kha dam por bsdam la byi ru'i mdog ma 'gyur bar du sman khu 'thag rim bzhin gsab ste btsos)</i></p>
<p>Crush the precious substances, pour and boil for one morning; then boil in clean water; then boil in good <i>chang</i>; after that wash with clean water. <i>(rin chen khram khrum brdungs pa blugs la snga dro zhiq btso/de nas chu gtsang la btso/ de nas chang bzang bo la btso/ de rjes chu gtsang gis bkru ba gnad yin no/)</i></p>	<p>After that add good <i>chang</i> and boil it, then wash clean with cold water, then cleanse by boiling it three times in clean water. <i>(de rjes chang bzang po bsnan nas btso/ de rjes chu grang gis dag par bkru/ de rjes chu gtsang nang du lan gsum btsos la bzhal lo/)</i></p>	<p>Then throw the medicinal liquid and wash and rinse. After that boil [the ground substances] for two hours in strong [old] <i>chang</i>. Rinse and wash them in cold water till clear. Again, boil three times in clean water. After that wash and rinse with water [soaked with] small cardamom, and cold water until it is very clear; the harmful parts (<i>dug</i>) and smell disappear, and the potency will be excellent. <i>(rjes sman khu dor la bkru bshal bya/ de nas gar chang du chu tshod gnyis tsam btsos te/ chu grang gis bkru bshal dag par bya/ slar chu gtsang du lan gsum btso ba dang/ de rjes sug chu dang/ chu grang gis bkru bshal shin tu dag par byas pas dug dang dri ma thon zhing nus pa phul du byung ba 'byung ngo/)</i></p>

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Endnotes

1. Here, he refers to complex forms of knowing that involve deeper realizations, expressed in Tibetan as the ‘all-knowing (mind)’ (*tham chad shes pa*).
2. The Men-Tsee-Khang is the largest Tibetan medical institute in India. On its expansion, see Kloos (2011).
3. An example here is the processing of types of calcite (*cong zhi*) during a particular full moon.
4. Since they are explained in more detail in Tidwell and Nettles (2019), I am not repeating them here.
5. These eight types refer to (1) *nüpa* of power/temperature (*tobs kyi nus pa*), (2) *nüpa* of taste and similarly classified (*ro dang phyogs mthun gyi nus pa*), (3) *nüpa* of smell (*dri’i nus pa*), (4) *nüpa* of antidotes (*gnyen po’i nus pa*), (5) *nüpa* consistent with type (*rigs mthun gyi nus pa*), (6) *nüpa* consistent with shape (*dbyibs mthun gyi nus pa*), (7) *nüpa* of dependent arising (*rten ’brel gyi nus pa*), and (8) *nüpa* of aspirational prayers/blessings (*smon lam gyi nus pa*); Tendzin Püntsock (2009: 64/5–66/6). See also Dawa Ridak (2003: 13/5–22). Various types of *nüpa* are currently being studied textually and ethnographically by Gerke, Tidwell, and van der Valk (see also the Introduction, Gerke and van der Valk 2019).
6. For exceptions see Hsu (2008) on *qigong* and types of acupuncture and Farquhar (1994) and Scheid (2002) on specific TCM diagnostic practices.
7. Tibetans settled in India largely as refugees after the Chinese occupation of Tibet in the late 1950s.
8. Sowa Rigpa was officially recognized by the Government of India in 2010 and has since undergone various forms of standardization.
9. The PRC contexts would be quite different (see, for example, Adams 2002; Adams, Dongzhu, and Le 2010) and cannot be discussed here in detail.
10. Knowledge here is typically passed along Buddhist lines of ‘oral transmission’ (*lung*), ‘explanations’ on the actual practice (*khrid*), and ‘empowerments/initiations’ (*dbang*). See Tidwell (2017) and Gerke (2015: 871–72) on ways of medical knowledge transmission.
11. Textual formulas are reformulated in practice (Gerke 2018) and adapted to changing social and local ecologies (see van der Valk 2019).
12. In Tibetan, these are *gser*, *dnqul*, *zangs*, *lcags*, *g.yu*, *mu tig*, *nya physis*, *dung*, *byu ru*, and *mu men* respectively. Yutok Yönten Gönpö (1982: 66/12–17).
13. This work is titled *A Lump of Crystal* and its commentary *A Rosary of Crystal*, in Tibetan briefly called *Shelgong Sheltreng* (*Shel gong shel ’phreng*). See Tendzin Püntsock (2009: 4/6–6/5; 70/7–100/14).
14. Together, they appear in published formulas of the precious pills Rinchen Drangjor, Ratna Samphel, Old Turquoise 25, Jumar 25, and Rinchen Wangril Shelkar; coral and pearl appear together with lapis lazuli in Rinchen Mangjor Chenmo; and pearl and old turquoise are both ingredients of Chakril Chenmo formulas (Troru Tsénam 2011–2012: 696–728). We can assume variations in ingredients across geographic regions and medical traditions.
15. Pearl is also used in the semi-precious pill Samnor (Blaikie 2015).
16. He refers here to the eleventh chapter in the last of the *Four Tantras*. See Gerke and Ploberger (2017).
17. This term is polysemous and can mean ‘post-therapeutic complications’ and also ‘antidote,’ which is used to combat poisoning caused by the wrong intake of processed mercury (Gerke and Ploberger 2017). See Simioli (2016) on mercury as a *loknön*.

18. *kha cig grub cha dang ro nus kho na tsam ma yin par rten 'brel gyi nus pa dang / smon lam gyi nus pa/ kha dog gi nus pa/ 'od kyis nus pa la sogs pas nad dang gdon sel zhing/ srung ba'i nus pa dang ldan pas lus la 'chang bas kyang rung ngo* (Kelden Nyima 2010: 7/12-14, my translation).

19. Examples are manifold: taking refuge in 'the three jewels' (the Buddha, Dharma, and Sangha), revering the 'Diamond vehicle' (Vajrayāna), or Buddhas being born from jewels such as the 'jewel-born' Ratnasambhava, and so on.

20. Open access image source: <<https://www.flickr.com/photos/wonderlane/5914004056>> (accessed on 29 March 2019).

21. In Traditional Chinese Medicine (TCM), such a quality-location concept is called *daodi*, which defines the best places of origin for particular herbs. Thanks to Jan van der Valk for pointing this out.

22. For example, Sangyé Gyatso (1982: 253/20, 254/11-12, 254/20) and Tendzin Püntso (2009: 78/17, 90/15, 95/2).

23. See Czaja (2013: 86) for an historical example on the competition between the Gelukpa and Kagyüpa Buddhist schools to make precious pills.

24. *g.yu yis dug dang mchin pa'i tsha ba sel*. See Yutok Yönten Gönpö (1982: 66/14-15).

25. According to Walker-Watson (1983: 16), turquoise is sourced from the vicinity of Lhasa and near Chamdo, the Gangschan Mountains of Ngari-Khorsum in Western Tibet, Draya to the west of Bathang, and the mountainous region of Derge in Eastern Tibet. For a special online issue on Tibetan turquoise see Bellezza (2013).

26. See Rechung Rinpoche (1973: 183-185) on a translation of this story and Yang Ga (2019) on a historical analysis of its authorship.

27. Deumar writes: "[Turquoise is] perceived as the king of precious substances or the king of stones" (*rin po che'i rgyal po'am rdo'i rgyal po la 'jug*). Tendzin Püntso (2009: 78/18).

28. These names appear in Tendzin Püntso (2009: 78/17) and Lozang Chödrak (1997: 16/4) respectively.

29. In early sources, the terms *lha* (deity) and *la* seem to be used synonymously, such as in *kula* (*sku bla*), which means 'personal guardian deity.' Karmay (1996) points to the existence of a *la* of a (royal) family, or even a whole nation.

30. Recorded during a lecture the author presented on this paper at the University of Oxford, in November 2017.

31. This text, in Tibetan *Sman dpyad zla ba'i rgyal po*, has a controversial history of perhaps Chinese or Sanskrit origins and was likely composed during the eighth to

eleventh century (McGrath 2017: 503-04). In this text, old turquoise appears in chapter 79 on medicinal powders and turquoise in chapter 103 on curing limbs. See Hashang Mahāyāna and Vairocana (1994: 214/3, 285/8).

32. One could speculate about a link to Chinese medicine where the liver (*gan*) is associated with blue-green (*qing*), wood (*mu*), and the spring season. Eating green foods strengthens the liver, liver disorders lead to greenish eyes, and so on. Thanks to Jan van der Valk for pointing this out.

33. These three Tibetan types are pale (*drug dkar*), red-tinted (*drug dmar*), and perky [bright] (*g.yu spyang*); the latter is superior and more blue. Deumar also classifies two kinds of 'intermediate turquoise' (*bar g.yu*) and three types of 'new turquoise' (*g.yu gsar*). Tendzin Püntso (2009: 79/8-15).

34. *byu rus mchin tshad rtsa tshad dug tshad sel*. Yutok Yönten Gönpö (1982: 66/16).

35. Identification unclear. A possibility is Mukut, a place on Tioman island in Malaysia that has coral reefs.

36. *dmar po ni sing ga la dang mu ku Ta la sogs pa'i gling nas byung/ deng sang ka smir dang nee pa la'i tshong pa rnams kyis mang du khyer yong*. Tendzin Püntso (2009: 91/6-8).

37. *di dag ni mtha'i rgya mtsho'i 'gram gyi brag dang bye ma las shing ltar skye bas rgyu dngos rdo yin kyang/ skye lugs kyis shing yang zer te*. Tendzin Püntso (2009: 91/3-4).

38. *mu tig klad pa 'dzag gcod dug nad sel*. Yutok Yönten Gönpö (1982: 66/15).

39. Tibetan nobility also bought pearls from China (Martin 2014: 134, note 109; 595), but China is not mentioned as a source by Deumar.

40. Pearl *bhasmas* are made from pre-processed pearls that are repeatedly heated in a crucible, powdered and triturated into calcined ash. For *pisti*, pearls are boiled and ground up in plant juice, dried, and triturated.

41. For Tibetan versions (with variations) of these types see, for example, Tendzin Püntso (2009: 95/6-96/2), Lozang Chödrak (1997: 19/20-20/11), or Sangyé Gyatso (1982: 254/1-11).

42. Their Tibetan medical usage is strikingly different from the *Aṣṭāṅgahrdayasamhitā*, where pearls are largely used to treat eye disorders (Hilgenberg and Kirfel 1941: 568.34, 575.22, 579.64, and 586.31), while coral is mentioned in an external paste to treat urinary disorders (ibid 400.13). Coral and pearl appear in the same chapter but in separate ointment formulas to treat weakness of eyesight (ibid 586.31 and 32), and together only once in an external ointment formula to treat the eczema *visarpa* (ibid 452.14). The *Aṣṭāṅgahrdayasamhitā* is of course an early work, and

later centuries, when *bhasmas* became more popular (see Wujastyk 2019) might very well show different usages.

43. In chapter 66 on treating *tripa* (*mkhris pa*) (Hashang Mahāyāna and Vairocana 1994: 170/5), in chapter 69 on treating reproductive fluids (*bsam se'u*; *ibid* 178/13), in chapter 75 on treating swelling in the throat (*gag lhog*; *ibid* 195/3), and in chapter 76 on treating poisoning (*dug nad*; *ibid* 205/13).

44. In chapter 79 on powdered medicines (*phye ma*; *ibid* 214/3).

45. In chapter 99 on teaching the descending pulse (*rtsa'i babs bstan pa*; *ibid* 279/13).

46. In chapter 87 on treating poisoning (Yutok Yönten Gönpö 1982: 543/11-13, 548/8, and 553/12).

47. *g.yu dang mu men mu tig sog/s/ brtan g.yo bzhu dang mi bzhu ba'i/ khams las grub pa'i rin chen kun/ dug dang phral la gtang bar bya/ ma phral phan las gnod pa che*. Zurkhar Nyamnyi Dorjé (1993: 289/1-4, my translation).

48. Such meta-discursive practices involved in this discourse of invented traditions have been pointed out, among others, by Briggs (1996). On approaches of science to legitimize traditional Sowa Rigpa practices see Adams (2002), Adams, Dhondup, and Le (2010), and Kloos (2011, 2015).

49. How these substances have been identified or substituted in practice over time is a different question that cannot be addressed here.

50. This specific method is briefly mentioned by Deumar for the processing of pearls and lapis lazuli: *mu tig mu men gnyis la phag tshil byug/ skyer pa'i me la ngam nag song tsam bsreg*. Tendzin Püntsock (2009: 588/20). Dr. Penpa Tsering uses this specific method when processing lapis lazuli for common formulas (e.g. Gawa 16, Khyunga Nyila). The processed lapis can be kept in stock and used when formulas are made. Precious pills are not made so often; thus all the precious stones are processed together at the time, and the general method of *dukdön* is applied.

51. Exceptions might be large-scale pharmacies in the PRC that follow GMP-standardized practices.

52. This is beyond the scope of this paper but part of the author's current FWF project at the University of Vienna.

53. For use in medicines the seeds of myrobalan fruits are removed, which is very work-intensive. For processing this is not necessary, and the entire myrobalan fruit can be used (Personal communication, Dr. Choelothar, March 2018).

54. *khu ba thon nges skol* here is a traditional Tibetan time indicator of about fifteen to twenty minutes (Personal communication, Dr. Choelothar, March 2018).

55. This functions like a tea bag and makes it easy to remove the liquid that contains the *duk* (Personal communication, Dr. Penpa Tsering, June 2017).

References

- Adams, Vincanne, Renqing Dongzhu, and Phuoc V. Le. 2010. Translating Science: The Arura Medical Group at the Frontiers of Medical Research. In *Studies of Medical Pluralism in Tibetan History and Society (Proceedings of the 11th Seminar of the International Association for Tibetan Studies, Bonn 2006)*, edited by Sienna Radha Craig, Mingji Cuomu, Frances Garrett and Mona Schrempf, 111-136. Andiastr, Switzerland: International Institute for Tibetan and Buddhist Studies GmbH.
- Adams, Vincanne. 2002. Establishing Proof: Translating Science and the State in Tibetan Medicine. In *New Horizons in Medical Anthropology: Essays in Honour of Charles Leslie*, edited by Mark Nichter and Margaret Lock, 200-220. New York: Routledge.
- Anand, Dibyesh. 2000. (Re)imagining Nationalism: Identity and Representation in the Tibetan Diaspora of South Asia. *Contemporary South Asia* 9(3): 271-287.
- Bellezza, John Vincent. 2013 (August). Tibetan Turquoise: Beaming Stone of Life. In *Flight of the Khyung*. <<http://www.tibetarchaeology.com/august-2013/>> (accessed on 18 March 2019).
- Blaikie, Calum. 2013. Currents of Tradition in Sowa Rigpa Pharmacy. *East Asian Science, Technology and Society: An International Journal* 7(3): 426-451.
- . 2015. Wish-fulfilling Jewel Pills: Tibetan Medicines from Exclusivity to Ubiquity. *Anthropology & Medicine* 22(1): 7-22.
- Briggs, Charles L. 1996. The Politics of Discursive Authority in Research on the 'Invention of Tradition.' *Cultural Anthropology* 11(4): 435-469.
- Cardi, Francesca. 2005-2006. Principles and Methods of Assembling Tibetan Medicaments. *The Tibet Journal* XXX & XXXI(4 & 1): 91-108.
- Czaja, Olaf. in preparation. *Rethinking the Base of Tibetan Drugs. A Study of Tibetan Pharmacology*.

- . 2013. On the History of Refining Mercury in Tibetan Medicine. *Asian Medicine* 8(1): 75-105.
- Dawa Ridak (Zla ba ri brag). 2003. *Bod kyi gso ba rig pa las sman rdzas sbyor bz'i lag len gsang sgo 'byed pa'i lde mig*. Delhi: Rig Drag Publications.
- Dodin, Thierry and Heinz Räther. 2001. *Imagining Tibet: Perceptions, Projections, & Fantasies*. Boston: Wisdom Publications.
- Farquhar, Judith. 1994. *Knowing Practice: The Clinical Encounter of Chinese Medicine*. Boulder: Westview.
- Gerke, Barbara, and Florian Ploberger. 2017. Jewels in Medicines: On the Processing and Efficacy of Precious Pills According to the *Four Treatises*. In *Buddhism and Medicine: An Anthology*, edited by Pierce Salguero, 583-592. New York: Columbia University Press.
- Gerke, Barbara, and Jan M. A. van der Valk. 2019. Introduction: Approaching Potent Substances in Medicine and Ritual across Asia. *HIMALAYA* 39(1).
- Gerke, Barbara. 2015. Biographies and Knowledge Transmission of Mercury Processing in Twentieth Century Tibet. *Asiatische Studien/Etudes Asiatiques* 69(4): 867-899.
- . 2017. Tibetan Precious Pills as Therapeutics and Rejuvenating Longevity Tonics. *History of Science in South Asia [Proceedings of AyurYog Workshop, Rejuvenation, Longevity, Immortality. Perspectives on rasāyana, kāyakaḥ and bcud len practices, Vienna 2016]* 5(2):204-233.
- . 2018. The Signature of Recipes: Authorship, Intertextuality and the Epistemic Genre of Tibetan Formulas. *Revue d'Etudes Tibétaines* 45: 178-220.
- Gyatso, Janet. 2015. *Being Human in a Buddhist World: An Intellectual History of Medicine in Early Modern Tibet*. New York: Columbia University Press.
- Hashang Mahāyāna (Hwa shang ma hwa ya na) and Vairocana (Bai ro tsa na) (fl. ninth century CE?), transl. 1994. *Sman dpyad zla ba'i rgyal po*. Dharamsala: Bod gzhung sman rtsis khang.
- Hilgenberg, Luise, and Willibald Kirfel. 1941. *Vāgbhata's Aṣṭāṅgahridayasamhitā: Ein altindisches Lehrbuch der Heilkunde, aus dem Sanskrit ins Deutsche uebertragen mit Einleitung, Anmerkungen und Indices*. Leiden: Brill.
- Hobsbawm, Eric, and Terence Ranger. 1983. *The Invention of Tradition*. Cambridge [Cambridgeshire]; New York: Cambridge University Press.
- Hohmann, Sophie. 2010. National Identity and Invented Tradition: The Rehabilitation of Traditional Medicine in Post-Soviet Uzbekistan. *China and Eurasia Forum Quarterly* 8(3): 129-148.
- Hsu, Elisabeth. 2008. The History of Chinese Medicine in the People's Republic of China and its Globalization. *East Asian Science, Technology and Society: An International Journal* 2: 465-484.
- Janes, Craig R. and Casey Hilliard. 2008. Inventing Tradition: Tibetan Medicine in the Post-Socialist Contexts of China and Mongolia. In *Tibetan Medicine in the Contemporary World: Global Politics of Medical Knowledge and Practice*, edited by Laurent Pordié 35-61. New York: Routledge.
- Jansen, Jan, Sabine Luning, and Erik de Maaker, eds. 2009. *Traditions on the Move: Essays in Honour of Jarich Oosten*. Amsterdam: Rozenberg Publishers.
- Kelden Nyima (Skal ldan nyi ma). 2010. *Rin po che dang sa rdo'i sman gyi ngos 'dzin gsal ston me long*. Beijing: Mi rigs dpe skrun khang.
- Karmay, Samten. 1996. The Tibetan Cult of Mountain Deities and its Political Significance. In *Reflections of the Mountain. Essays on the History and Social Meaning of the Mountain Cult in Tibet and the Himalaya*, edited by Anne-Marie Blondeau and Ernst Steinkeller. Wien: Verlag der Österreichischen Akademie der Wissenschaften.
- Khazeni, Arash. 2014. *Sky Blue Stone: The Turquoise Trade in World History*. Berkeley: University of California Press.
- Kloos, Stephan. 2011. Navigating 'Modern Science' and 'Traditional Culture': The Dharamsala Men-Tsee-Khang in India. In *Medicine Between Science and Religion: Explorations on Tibetan Grounds*, edited by Vincanne Adams, Mona Schrempf, and Sienna Radha Craig, 83-105. New York: Berghahn Books.
- . 2015. Impotent Knowledges: Preserving 'Traditional' Tibetan Medicine through Modern Science. In *Fugitive Knowledges: The Preservation and Loss of Knowledge in Cultural Contact Zones*, edited by Andreas Beer and Gesa Mackenthun, 123-142. Münster & New York: Waxmann.
- . 2017. The Politics of Preservation and Loss: Tibetan Medical Knowledge in Exile. *East Asian Science, Technology and Society: An International Journal* 11(2): 135-159.
- Kongtrül Yönten Gyatso (Kong sprul Yon tan rgya mtsho, 1813-1899) et al. 2005. *Gso rig zin tig yang tig*. Beijing: Mi rigs dpe skrun khang.
- Lacey, Pippa. 2016. The Coral Network: The Trade of Red Coral to the Qing Imperial Court in the Eighteenth Century. In *The Global Lives of Things: The Material Culture of Connections in the Early Modern World*, edited by Anne Gerritsen and Giorgio Riello, 81-102. London, New York: Routledge.

- Langford, Jean M. 2002. *Fluent Bodies: Ayurvedic Remedies for Postcolonial Imbalance*. Durham and London: Duke University Press.
- Lozang Chödrak (Dar mo Sman rams pa Blo bzang chos grags, 1638–1710). 1997. *Bshad pa'i rgyud kyi le'u nyi shu pa sman gyi nus pa bstan pa'i tshig gi don gyi 'grel ba mes po'i dgongs rgyan*. Lanzhou: Kan su'u mi rigs dpe skrun khang.
- Martin, Emma 2014. *Charles Bell's Collection of 'Curios': Negotiating Tibetan Material Culture on the Anglo-Tibetan Borderlands (1900-1945)*. Ph.D. Dissertation, Department of History of Art & Archaeology, University of London, London.
- McGrath, William. 2017. Vessel Examination in the *Medicine of the Moon King*. In *Buddhism and Medicine: An Anthology*, edited by Pierce Salguero, 501-513. New York: Columbia University Press.
- McKay, Alex. 2018. The View from the Palace: The Sikkim Royal Archives. Unpublished paper delivered at University of Vienna, May 3, 2018.
- Murthy, P. Himasagara Chandra. 2008. *Rasaśāstra: The Mercurial System*. Vol. 49, *Banaras Ayurveda Series*. Varanasi: Chowkhamba Sanskrit Series Office.
- Nappi, Carla. 2009. *The Monkey and the Inkpot: Natural History and its Transformations in Early Modern China*. Cambridge MA: Harvard University Press.
- Neveling, Patrick, and Susanne Klien. 2010. Introduction: Tradition within and beyond the Framework of Invention. In *Tradition within and beyond the Framework of Invention: Case Studies from the Mascarenes and Japan*, edited by Patrick Neveling and Susanne Klien, 1-51. Halle-Wittenberg: Centre for Interdisciplinary Area Studies.
- Nyima Tséring (Nyi ma tshe ring). 2009. *Dngul chu btso bkru chen mo'i lag len*. Lhasa: Bod ljongs mi dmangs dpe skrun khang.
- Polo, Marco, August Bürck, and Karl Friedrich Neumann. 1845. *Die Reisen des Venezianers Marco Polo im dreizehnten Jahrhundert*. Leipzig: Teubner.
- Ranger, Terence. 1993. The Invention of Tradition Revisited: The Case of Colonial Africa. In *Legitimacy and the State in Twentieth Century Africa: Essays in Honour of A. H. M. Kirk-Greene*, edited by Terence Ranger and Olufemi Vaughan, 62-111. Houndmills, Basingstoke, Hampshire, London: Macmillan Press.
- RDLM (Research Department Lhasa Mentsikhang), eds. 1985. *Gso rig snying bsdu skya rengs gsar pa*. Lhasa: Bod ljongs mi dmangs dpe skrun khang.
- Rechung Rinpoche. 1973. *Tibetan Medicine. Illustrated in Original Texts*. London: Welcome Institute of the History of Medicine.
- Salvini, Mattia. 2016. Ratna: A Buddhist World of Precious Things. In *Soulless Matter, Seats of Energy. Metals, Gems and Minerals in South Asian Religions and Culture*, edited by Fabrizio Ferrari and Thomas Dähnhardt, 219-254. Sheffield and Bristol: Equinox.
- Sangyé Gyatso (Sde srid Sangs rgyas rgya mtsho, 1653-1705). 1982. *Gso ba rig pa'i bstan bcos sman bla'i dgongs rgyan rgyud bzhi'i gsal byed bai dur sngon po'i ma lli ka*. 2 vols. Lhasa: Bod ljongs mi dmangs dpe skrun khang.
- . 2010. *A Mirror of Beryl: Historical Introduction to Tibetan Medicine*. Translated by Gavin Kilty. Somerville, MA: Wisdom Publications: In association with the Institute of Tibetan Classics.
- Scheid, Volker. 2002. *Chinese Medicine in Contemporary China: Plurality and Synthesis*. Durham: Duke University Press.
- . 2007. *Currents of Tradition in Chinese Medicine 1626–2006*. Seattle: Eastland.
- Schwabl, Herbert and van der Valk, Jan. 2019. Challenging the Biomedical Notion of 'Active Substance': The Botanical Plasticity of Tibetan Medical Formulas. *HIMALAYA* 39(1).
- Sehnalova, Anna. 2019. Medicinal Mandala: Potency in Spatiality. *HIMALAYA* 39(1).
- Simioli, Carmen. 2016. The 'Brilliant Moon Theriac' (*Zla zil dar ya kan*): A Preliminary Study of Mercury Processing according to the *Vase of Amrita of Immortality* (*'Chi med bdud rtsi bum pa*) and its Influence on Tibetan Pharmacological Literature. *Revue d'Etudes Tibétaines* 37: 391-419.
- Smith, Pamela H. 2004. *The Body of the Artisan: Art and Experience in the Scientific Revolution*. Chicago: University of Chicago Press.
- . 2010. Vermilion, Mercury, Blood, and Lizards: Matter and Meaning in Metalworking. In *Materials and Expertise in Early Modern Europe: Between Market and Laboratory*, edited by Ursula Klein and Emma Spary, 29-49. Chicago: University of Chicago Press.
- Sönam Döndrup (Bsod nams don grub) and Bod rang skyong ljongs sman rtsis khang. 2006. *Bod sman sbyor sde chen mo*. Lhasa: Bod ljongs mi dmangs dpe skrun khang.
- Souren Melikian-Chirvani, Assadullah. 2011. Iran to Tibet. In *Islam and Tibet—Interactions along the Musk Routes*, edited by Anna Akasoy, Charles Burnett, and Ronit Yoeli-Tlalim. Farnham: Ashgate.

Tendzin Püntsook (De'u dmar Dge bshes Bstan 'dzin phun tshogs, b. 1672). 2009. *Shel gong shel phreng*. Dharamsala: Men-Tsee-Khang.

Tidwell, Tawni, L. 2017. *Imbibing the Text, Transforming the Body, Perceiving the Patient: Cultivating Embodied Knowledge for Tibetan Medical Diagnosis*, Ph.D. Dissertation, Anthropology, James T. Laney School of Graduate Studies of Emory University, Atlanta.

Tidwell, Tawni L. and Nettles, James H. 2019. Conceptions of Potency, Purity, and Synergy-by-Design: Toward developing a Sowa Rigpa Medical Theory-based Approach to Pharmaceutical Research. *HIMALAYA* 39(1).

Troru Tsénam (Khro ru Tshe rnam, 1928-2004). 2011-2012. Gangs dkar bdud rtsi'i khye'u bsdus las rin chen ril bu khag gi sbyor thabs lag len. In *Bod kyi gso rig kun btus*, edited by Otsang Tsokchen (O tshang tshogs chen) and Mtsho sngon zhing chen bod kyi gso rig zhib 'jug gling gis bsgrigs, 677-731. Beijing: Mi rigs dpe skrun khang.

Walker-Watson, M. N. 1983. Turquoise - The Gemstone of Tibet. *Tibetan Review* XVIII(6-7): 16-18.

Wujastyk, Dagmar. 2019. Iron Tonics: Tracing the Development from Classical to Iatrochemical Formulations in Ayurveda. *HIMALAYA* 39(1).

Yang Ga. 2010. *The Sources for the Writing of the Rgyud bzhi, Tibetan Medical Classic*. Ph.D. Dissertation, Inner Asian and Altaic Studies, Harvard University, Cambridge MA.

———. 2019. A Preliminary Study on the Biography of Yutok Yönten Gönpo the Elder: Reflections on the Origins of Tibetan Medicine. In *Knowledge and Context in the Tibetan Medical Tradition. PIATS 2016: Tibetan Studies: Proceedings of the Fourteenth Seminar of the International Association for Tibetan Studies, Bergen, 2016*, edited by William A. McGrath, 59-84. Leiden: Brill.

Yutok Yönten Gönpo (G.yu thog Yon tan mgon po). 1982. *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*. Lhasa: Bod ljongs mi dmangs dpe skrun khang.

Zolla, Elémire, and Cristina Del Mare. 1997. *Il corallo nella gioielleria etnica della Mongolia (Coral and Mongolian Ethnic Jewelry)*. Naples: Electa Napoli.

Zurkhar Nyamnyi Dorjé (Zur mkhar Mnyam nyid rdo rje, 1439-1475). 1993. *Man ngag bye ba ring bsrel pod chung rab 'byams gsal ba'i sgron me*. Lanzhou: Kan su'u mi rigs dpe skrun khang.