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Introduction

Asian medical industries

Stephan Kloos

Asian medicines are not what they used to be. No longer simply subaltern resources for the poor or struggling systems of traditional knowledge, they have become an integral part of modern Asia as official health care providers and innovative, lucrative pharmaceutical industries. While faith healers, village herbalists, and venerable scholar-practitioners remain important health resources in much of Asia and continue to shape popular images of “traditional” Asian medicine – not least as favourite subjects of anthropological studies and TV commercials marketing Asian medicines to urban audiences – their actual importance has declined throughout Asia. Conversely, mass-produced and professionally marketed “traditional” Asian health products and therapies have entered and altered mainstream healthcare not only in Asian countries but around the world. These developments constitute an industrial revolution of Asian medicines, the significance and magnitude of which cannot be underestimated. Long marginalised by biomedicine and government policies in the nineteenth and twentieth centuries, Asian medicines are today consumed by over half the world’s population, command a market value far exceeding 100 billion USD,¹ have their own government ministries,² and even claim a Nobel Prize for medicine.³ It is hardly surprising, therefore, that they play an increasingly important role in national and global health policies and, beyond the field of health, in Asia’s economic and political ascendance. Yet while their remarkable trajectory of professionalisation, modernisation, and globalisation during the twentieth century

1 No reliable figures exist regarding the total economic value of Asian medicines, and especially data on the TCM industry – which dominates the field – vary dramatically (between 25 and over 130 billion USD).

2 For example, Ayurveda, Unani, Siddha, and Sowa Rigpa are administered by the Indian Ministry of AYUSH since 2014.

3 In 2015, Tu Youyou won the Nobel Prize for extracting the antimalarial *artemisinin* from the Chinese herb *artemisia annua*, claiming to have drawn her inspiration from a fourth-century Chinese medical text (Chee, this volume; Hanson 2015; Hsu 2015). The TCM profession was quick to claim the Nobel Prize for itself, which led to a massive upgrading of state funded TCM research in China.

has been reasonably well studied, scholarship has by and large stopped short of explicitly focusing on and analysing the larger direction and outcome of this transformation: Asian medical industries.

The term Asian medical industries refers to the health industries that have emerged from the scholarly medical traditions of East, South, Inner, and Muslim Asia, including most notably Chinese medicine and related East Asian medicines like Japanese Kampo or Korean Hanbang, Ayurveda, Sowa Rigpa (Tibetan, Mongolian and Himalayan medicines), and Unani Tibb. While all these health industries have significant non-pharmaceutical aspects – think of acupuncture, different kinds of massage, and so on – this book only focuses on the pharmaceutical domain, which includes prescription drugs but also various categories of over-the-counter (OTC) medicines, nutritional supplements, and functional foods. Indeed, a key dimension of Asian medical industries is the fundamental *reformulation* (Pordié and Gaudillière 2014c) of Asian medicines, both in a literal, material sense concerning their ingredients and formulas, and in a figurative sense that encompasses their epistemologies, legal status, and regulatory aspects. Perhaps most significantly, this reformulation also entails a gradual, partial shift of focus from the clinical/medical sphere to the pharmaceutical/economic domain, where the main actors are no longer individual practitioners or local collectors (although, as this volume shows, they remain important), but companies and professional associations (cf. Gaudillière 2014b). While rooted in a general capitalisation of health (Gaudillière and Sunder Rajan 2021), the notion of “industry” itself exceeds the narrow economic domain of health products, corporations, and the market, encompassing the entire field of sociocultural, political, technological, scientific, and medical phenomena involved in the contemporary production, use, and transformation of Asian medicines in the widest sense. Consequently, Asian medical industries produce not only health commodities and economic profits but also political, social, cultural, and moral values.

Asian medical industries constitute a wider field than can be comprehensively covered within the space of one book. Thus, this volume does not contain chapters on the industries of Unani Tibb, Korean Hanbang, Siddha, Miao medicine, and Southeast Asian medicines (e.g. Thai, Khmer, Vietnamese, Indonesian, Myanmar), even if Unani has a significant presence in Muslim South and Central Asia (Attewell 2005; Schmidt Stiedenroth 2020), the Miao medicine industry in China is reportedly of similar value as the Ayurveda industry (Yang and Peng 2015), and the Korean herbal medicine industry is comparable to that of Kampo in Japan (Ma 2015, 2019). For the most part, these medical traditions – and particularly their emerging industries – remain under-researched, which is especially true for Southeast Asian medicines (see Coderey and Pordié 2019 for some notable exceptions). Yet even the industries of the classical and relatively well-studied medical traditions of East, South, and Inner Asia, which this volume focuses on, are only beginning to attract serious scholarship. Indeed, despite excellent

initial forays, they remain largely uncharted territory for the social sciences, perhaps partly due to their enormous size, multiple dimensions, and rapid transformations. Building on existing work on the professionalisation, modernisation, commercialisation, pharmaceuticalisation, and globalisation of Chinese medicine, Kampo, Ayurveda, and Sowa Rigpa,⁴ we thus seek to critically trace the ongoing industrial revolution of these Asian medicines and explore the characteristics of Asian medical industries as a larger phenomenon in the contemporary world.

Asian medical industries can also be understood to encompass the vast and dynamic Asian biomedical and biotech sector, where especially China and India act as major global players. Although this volume does not focus on Asian biomedicines per se, it centrally underscores the increasing obsolescence of a hard conceptual division between “traditional” and “modern” (i.e. biomedical) pharmaceuticals in the Asian industrial context. Kampo medicines, for example, need to comply with mainstream biomedical drug laws and regulations, while the Japanese biomedical pharmaceutical industry was significantly developed by herbal medicine producers; the research-and-development processes of many Ayurvedic products do not significantly differ from those of Western healthcare commodities; and “traditional Chinese medicines” (TCM itself being a modern invention) are produced in the same kind of high-tech factories – even, at times, by the same companies – as biomedicines. Conversely, Asian pharmacopeias are subjected to extensive biomedical research and bioprospecting, leading to successful biomedical drugs such as Novartis’ antimalarial drug Coartem® or Roche’s anti-viral Tamiflu®. Biomedical and consumer goods companies the world over increasingly respond to Asian medical competition by marketing their own herbal health products or even participate directly in the Asian medicines sector, such as Procter & Gamble’s Ayurvedic Vicks® products. As Asian medicines can no longer be considered “traditional” and increasingly share the same scientific, regulatory, and market space as biomedicine, the modern-traditional dichotomy makes less sense than ever. Similar to the Asian biotech sector (e.g. Sunder Rajan 2006, 2017; Ong and Chen 2010) or the biomedically conceived “pharmaceutical nexus” (Petryna and Kleinman 2006), Asian medical industries constitute transnational and capitalist pharmaceutical assemblages (Kloos 2017a). Yet too often, they are still implicitly framed as marginal domains of tradition and culture, rather than as the important public health, economic and political – but also cultural – assets they have become.

4 For work on the professionalisation of Asian medicines, see Leslie (1968, 1973), Scheid (2002), Craig (2008). On modernisation, see Leslie (1974), Adams (2007), Adams and Li (2008). On commercialisation, see Banerjee (2002), Hsu (2008b), Madhavan (2009). On pharmaceuticalisation, see Banerjee (2008), Blaikie (2015), Kloos (2017a). On globalisation, see Alter (2005), Zhan (2009), Kloos (2020).

How did “traditional” Asian medical systems become “modern” industries? How do they operate today, and what is their role in ongoing transformations of health, medicine, and society in contemporary Asia? How can we study Asian medicines as industries rather than as “traditional culture,” and what might this contribute to medical anthropology and other social studies of medicine and Asia? In addressing some of these questions, the present volume provides a comparative perspective on Asian medicines as *industries* in a larger regional and historical context. In doing so, it offers new insights into the emergence and evolution of Asian medical industries, their various paths of integration into official health care systems, and their sources of raw materials. Even more importantly, *Asian medical industries* outlines and applies a new analytic framework that transcends, like its subject, the conceptual domains of “tradition,” “culture,” or “medical systems.” This opens Asian medicines to the kind of critical scholarly inquiry that has so far largely remained limited to biomedicine, while at the same time challenging the unnecessarily narrow biomedical focus of notions like pharmaceutical reason (Lakoff 2005), the pharmaceutical nexus (Petryna and Kleinman 2006), biocapital (Sunder Rajan 2006), pharmaceutical capitalism (Gaudillière and Sunder Rajan 2021), most work on global health (e.g. Biehl and Petryna 2013; Farmer et al. 2013), and the field of medical anthropology itself (cf. Scherz 2018).⁵ There is no good reason why Asian medical industries should not be considered in critical explorations of contemporary health and healthcare, especially as they explicitly and strategically address public health issues like care and aging, mental health, and chronic illness (e.g. Lock 1980, 1993; Cohen 1998; Lang 2018).

Beyond medical systems

Both in its pan-Asian comparative approach and its insistence on a fundamental reframing of its subject, this book follows a similar agenda as Charles Leslie’s seminal volume *Asian Medical Systems* (Leslie 1976b). Studying Asian medicines as *cultural and epistemic systems* yielded unprecedented insights into their histories, medical theories, healing modalities, the transmission of knowledge, and encounters with the “other” in the form of biomedicine, modernity, or the world – the very foundation that current scholarship on Asian medicines, including this volume, builds on. It was thanks to Leslie’s intervention that Asian medicines began to be taken seriously as medical, scholarly, and indeed civilisational systems in Western academic circles, substantially contributing to the development of the nascent fields of medical

⁵ The strong biomedicalisation of medical anthropology over recent decades is well demonstrated by the otherwise comprehensive and wide-ranging Routledge Handbook of Medical Anthropology (Manderson et al. 2016), which remarkably does not cover “traditional and complementary medicine” at all.

anthropology and Asian medical history. Topics like medical pluralism, explanatory models, professionalisation, modernisation, and later also globalisation became central problems addressed by medical anthropological research up to this day, while medical historians began to challenge biomedically dominated historiographies by tracing previously invisible histories of Asian medicines. Leslie’s work and legacy – including successor volumes to *Asian Medical Systems* (Leslie and Young 1992; Bates 1995; Connor and Samuel 2001; Alter 2005) and the large number of studies on each of these systems individually – both documented and participated in the gradual emergence of Asian medicines as markers of national identity (e.g. Langford 2002; Kloos 2011), intellectual history (e.g. Prakash 1999), and alternative modernities (e.g. Hsu 2009; Pordié and Gaudillière 2014a) in different parts of the continent. In order to contextualise the chapters that follow, a brief overview of the East, South, and Inner Asian “medical systems” is necessary.

Classical Chinese medicine can be traced back to the writing of its foundational texts between the third century BCE and the third century CE (Unschuld 1985; Scheid 2007), including the *Huangdi Neijing* (Yellow Emperor’s Inner Canon), the *Shang Hanlun* (Treatise on Cold Damage Disorders and Miscellaneous Illnesses), and the *Huangdi Bashi Yi Nanjing* (Yellow Emperor’s Canon of Eighty-One Difficult Issues). Although these canons provided its core concepts and cosmology, it was not before unprecedented state involvement during the Song dynasty (960–1279 CE) that Chinese medicine emerged as a systematic scholarly medicine (Goldschmidt 2008), which also spread to neighboring Japan, Korea, and Vietnam (Otsuka 1976; Park et al. 2012). The impact of Western medicine and modernity from the nineteenth century onwards constituted a third major turning point in the history of Chinese medicine, leading to the creation of a new, modern “species” of Chinese medicine in the Republican Period from the 1920s onward, which – somewhat ironically – came to be called “Traditional Chinese Medicine” or simply TCM (Lei 2014). During the early years of the communist People’s Republic of China, this still marginal “mongrel medicine” (ibid.) was reworked into a standardised theoretical system with a nationwide network of institutions (Taylor 2005) and was later successively integrated into national health care policy (Farquhar 1994; Park et al. 2012). China’s transition to a market economy in the 1990s, the inclusion of TCM in China’s national health insurance in 1999, and the country’s WTO entry in 2001 created the conditions for the emergence of a fully fledged TCM industry. In 2017, China’s first law on Chinese medicine came into effect, explicitly positioning Chinese medicine – the term now also including China’s minority medicines – on an equal level to biomedicine. Meanwhile, TCM (including acupuncture) has spread around the globe (Hsu 2008a, 2008b) and moved out of Chinatowns into mainstream healthcare, fundamentally remaking itself in the process (Zhan 2009).

Despite the overwhelming size and importance of Chinese medicine and an outstanding body of scholarship concerning it, its *industry* remains

among the least studied among major Asian medical traditions. To be sure, scholars have noted the emergence of a Chinese herbal industry and the concomitant pharmaceuticalisation of Chinese medicine from the 1950s and especially the 1990s onwards (Scheid 2002; Taylor 2005: 77–78), the onset of Chinese medicine entrepreneurship and its commercialisation during the 1980s (Farquhar 1996), and the entrance of Chinese proprietary medicines into global wellness markets in the 2000s (Hsu 2009). Nonetheless, most of these studies treat the Chinese medicine industry as peripheral to other concerns, with only a few scholars – most notably Liz Chee (2021) – addressing it more directly (Kuo 2015; Smith 2019; Wang 2019), including scholars of Ayurveda providing interesting comparative perspectives (Islam 2017; Kudlu and Nichter 2019). Similarly, Japanese *Kampo* and Korean *Hanbang*, which originated from Chinese medicine but were shaped by centuries of independent development (van Put 1995; Hanson 2016; Kang and Kim 2016), remain understudied as medical industries. A small number of articles on the Japanese *Kampo* medicines industry (Arai 2009; Umemura 2011) and a larger number on the Korean herbal medicines industry (Cho 2000; Kim 2006, 2009; Ma 2015, 2019; Lee 2016) are notable exceptions. Nonetheless, the comparative dearth of serious social science research on East Asian medical industries stands in sharp contrast to the large number of botanical, pharmacological, and clinical studies being published on these medicines in China, Japan, and South Korea, underscoring the importance of placing such industry-driven knowledge production in social, political, and historical context. The four chapters dedicated to East Asian medical industries in this volume thus break new ground in presenting hitherto non-existent historical and ethnographic insights into the Chinese medicine and Japanese *Kampo* industries.

The roots of Indian medicine are often traced back to the Vedic Period (ca. 1500–500 BCE), but Ayurveda (the “science of longevity”) as a distinct medical tradition emerged only around the time of the Buddha (fifth to fourth century BCE) in the North Indian ascetic milieu (Zysk 1991). Its foundational compendia, the “great triad” consisting of the *Caraka Samhita*, *Sushruta Samhita*, and *Ashtangahridaya Samhita*, were compiled between the last centuries BCE and the seventh century CE (Wujastyk 1998; Meulenbeld 1999–2002), defining Ayurveda in its classical form. They were also widely translated and known far beyond India. Referring to a fifth-century description of public hospitals, Dominik Wujastyk (1998: 2) remarks that “India may have been the first part of the world to have evolved an organised cosmopolitan system of institutionally-based medical provision.” Even after what is considered its golden age, Ayurveda continued to refine its knowledge and dynamically adapt to India’s changing sociocultural, political, and religious context, including the decline of Buddhism after the seventh century, Muslim influx beginning in the eleventh century, and the period of Mughal dominance from the fourteenth to the eighteenth centuries (Smith and Wujastyk 2008). This was also true for the early

colonial period from the sixteenth to the nineteenth century when Indian medical knowledge was treated with sympathetic interest and respect by the European traders and colonialists (Patterson 1987). However, the emergence of modern medicine in Europe and a radical change in British colonial policy in 1835 led to the invalidation and marginalisation of Indian medicines, while Western medicine was instituted as the only legitimate form of official healthcare. Faced with existential crisis and in resistance to such colonial policies, Ayurvedic practitioners began organising themselves to respond to the challenge of modern biomedicine. Subsequently, during the early and mid-twentieth century, they gradually transformed Ayurveda “from an eclectic set of healing practices to a quintessentially Indian medicine” (Langford 2002: 7), laying the foundations for its more recent revival.

Ayurveda’s modernisation and professionalisation in the second half of the twentieth century have been extensively studied (e.g. Leslie 1968, 1974, 1976a; Brass 1972; Langford 2002; Wujastyk and Smith 2008), and its increasing commercialisation and pharmaceuticalisation have already been noted in the late 1980s and 1990s (Leslie 1989; Nichter 1996). A decade later, Maarten Bode and Madhulika Banerjee first considered Ayurveda and Unani as industries, analysing Ayurvedic pharmaceutical companies’ combination of traditional and modern knowledge, practices, and identities (Bode 2008), and critically tracing Ayurveda’s gradual industrialisation from colonial times up to the present (Banerjee 2009). Based on the notion of “reformulation regimes” (Pordié and Gaudillière 2014c), Laurent Pordié and Jean-Paul Gaudillière’s special journal issue *The Herbal Pharmaceutical Industry in India* (2014a) explored innovation processes and intellectual property rights as central to the reinvention of Ayurveda as a pharmaceutical industry. Pointing to a merging of cultural and economic politics in Asian medicine, Nazrul Islam (2017) and others (Halliburton 2011; Meier zu Biesen 2018; Kudlu and Nichter 2019) identified the recent boom in Ayurvedic patent drugs, lifestyle health products, and cosmetics as an instance of nation branding. Other publications deal with the problem of drug regulation and quality control in the Ayurveda industry, often with an applied focus (e.g. Shankar et al. 2007; Sahoo et al. 2011). Such research has significantly advanced critical scholarship on contemporary Asian medicines, making Ayurveda the best-studied Asian medical industry so far. Based on this groundwork, this volume’s chapters on the Ayurveda industry are able to pursue important new directions of research while highlighting the sheer scope of this field of inquiry.

The classical medical tradition of Highland and Inner Asia, Sowa Rigpa (“the science of healing”) originates from Central Tibet, where it was assembled from elements of Tibetan, Indian, Chinese, Persian, and Central Asian medical knowledge from at least the seventh century CE onwards (Garrett 2008; Kilty 2010). Best known as “Tibetan medicine,” it actually constitutes a family of regional medical traditions – also including Mongolian, Bhutanese, and Himalayan Buddhist medicine (Kloos et al. 2020) – that

are all based on the *Gyushi* (Four Tantras), Sowa Rigpa's twelfth-century standard treatise (see Yang Ga 2014). Between the thirteenth and the seventeenth centuries, this medical tradition spread, together with Tibetan Buddhism, from Central Tibet throughout the Tibetan plateau (Wangdue 2016), Mongolia (Bold 2013), and the Himalayan range (e.g. Wangchuk 2008; Kloos and Pordié 2022). Particularly during and following the Fifth Dalai Lama's reign in the late seventeenth century, Sowa Rigpa was institutionalised as part of the Ganden Phodrang state's hegemonic power (Gyatso 2015), coming to serve much of Inner Asia as the sole professional health resource. In the early and mid-twentieth century, however, Sowa Rigpa's existing medical structures were largely destroyed following large-scale political upheavals (particularly the Stalinist purges in Mongolia and Mao's annexation of and violent reforms in Tibet) coupled with the forceful introduction of biomedicine. Decades of official repression in Tibet, Mongolia, and Siberia (e.g. Hofer 2018; Kloos, this volume), and governmental neglect in the Himalayan areas (e.g. Craig 2012; Pordié and Kloos 2022) ensued before Sowa Rigpa began to reemerge in the 1980s and 1990s as an increasingly popular primary health resource (Janes 1999; Craig and Adams 2008; Hofer 2018; Blaikie 2019), and a placeholder for various national and ethnic identities (e.g. Janes 1995; Janes and Hilliard 2008; Kloos 2017b).

Although translations of, and general introductions to, Tibetan medicine already began to appear in the 1970s (see Kloos 2015), critical scholarship on the topic was pioneered by Vincanne Adams (1988, 1998, 1999, 2001a, 2001b, 2005, 2007) and Craig Janes (1995, 1999, 2001, 2002). Tracing Tibetan medicine's transformations and changing sociocultural roles since the late twentieth century, they were soon joined by other scholars exploring its encounters with mainstream science, the market economy, and nationalist politics in different locations (e.g. Craig 2007, 2008, 2012; Schrempf 2007; Pordié 2008; Fjeld and Hofer 2010–2011; Adams et al. 2011; Hofer 2018; Pordié and Kloos 2022). While some of this work already considered aspects of Sowa Rigpa's industrialisation, such as the introduction of modern scientific standards (Adams 2002a, 2002b) and pharmaceutical quality control (Craig 2011; Saxer 2012), the development of a Tibetan medicine industry per se was first studied by Martin Saxer (2013). Since then, the scope of inquiry expanded beyond Central Tibet to the transnational Sowa Rigpa industry (Kloos 2017a), with new insights published on its size, shape, and dynamics (Kloos et al. 2020), its integration into intellectual property rights regimes (Madhavan 2017), and its role in public (Blaikie 2019) and global health (Kloos 2020). While Sowa Rigpa studies have become a vibrant field of scholarship, it remains disproportionately small compared to Sowa Rigpa's size, diversity, and regional importance, and mostly limited to a few key sites of Tibetan medicine in Tibet and India. This volume, therefore, strategically focuses on under-explored domains of the Sowa Rigpa industry, including Mongolia, Nepal, and the raw materials trade.

As this impressive body of scholarship on Asian medicines demonstrates, Leslie's notion of *Asian medical systems* was an extremely productive one. His intervention, furthermore, not only made Asian medicines legible to academics, but also to governments, administrators, and wider domestic and international publics (see e.g. Kloos 2013, 2016), leading to increasing levels of popularity, official recognition, commercial development, and eventually their reassemblage as Asian medical industries. In short, the reframing of Asian medicines as systems was a resounding success on multiple levels. In the contemporary context, however, almost half a century after Leslie established "medical systems" as a conceptual framework, these strengths increasingly become limitations. The coherent, rational, fixed, and ultimately closed character of the concept tends to direct the analytic focus to issues of identity and the geographic, cultural, and epistemic boundaries of these medicines-as-systems, often producing unresolvable binary oppositions, such as traditional-modern, local-global, East-West, Indian-Chinese, and so on. The resulting emphasis on purity, coherence, and (in)compatibility, as well as its cultural/epistemic analytic framework, seriously distorts our understanding of the theory, practice, and development of Asian medicines today (cf. Pordié and Gaudillière 2014b: 3).

As industries, Asian medicines have outgrown the framework and analytical capacity of the "medical system" – not despite but precisely because of the success of the concept. The "worlding" of Chinese medicine (Zhan 2009), contemporary reformulation regimes in Indian medicines (Pordié and Gaudillière 2014c), or the pharmaceutical assemblage of Sowa Rigpa (Kloos 2017a), for instance, are all rooted in and strategically utilise terms like "traditional medicine" or "medical systems," but also transcend them. In contrast to the stable classical core, internal epistemological coherence, clear outer contours, and historical continuity implied by medical systems, Asian medicines today are marked by fluid external boundaries and ongoing reformulations of core epistemologies. As becomes clear in the chapters that follow, their internal coherence and historical continuity are opened processes rather than established facts, with considerable efforts made to (re-)affirm them in radically new circumstances, be it through simple marketing strategies, official regulation and standardisation, or new historiographies. While there exists a small but growing body of cutting-edge literature on specific sites and aspects of Asian medical industries as outlined above, this volume is an attempt to articulate a larger comparative framework that informs and connects such scholarship. It thus builds on and broadens the scope of collective volumes such as *Asian Industrial Medicines* (Pordié and Hardon 2015) and *Circulation and Governance of Asian Medicines* (Coderey and Pordié 2019), which played a pioneering role in applying a comparative pan-Asian approach to the rapid industrialisation of Asian medicines, even without explicitly conceptualising the phenomenon as such. What all of this work makes clear, then, is that we need a new perspective and approach to account for the dramatically changed, and

changing, world of Asian medicines. Asian medical industries, this volume suggests, offer such an approach.

Characteristics of Asian medical industries

Even the rudimentary overview above of Asian medicines and their industrial development suggests that, from a comparative perspective, their overall development is remarkably consistent (see also Meyer 1995). Indeed, their similar historical trajectories in the twentieth and early twenty-first centuries – some of which are explored in this volume – are striking, considering their vastly different contexts and generally weak relations of exchange. While the exact timelines, the degree of their transformation, and local details vary, what is today known as Chinese medicine, Kampo, Ayurveda, or Sowa Rigpa all underwent existential crises following political upheavals/reforms and the introduction and establishment of biomedicine as the sole legitimate form of healthcare. Forced to radically reinvent themselves in a context of rapid modernisation, they all began to align themselves with national political agendas and to (re-) organise, professionalise, and standardise their medical knowledge, clinical practice, training modalities, and professional institutions. Consequently, Asian medicines began to be recognised and developed as domains of significant economic and public health potential in the 1990s, which initiated a still-ongoing phase of unprecedented industrial growth driven by their increasing commercialisation, official regulation, and integration into national economies and health care systems. Of particular importance in this latest phase were state-enforced regulation and standardisation regimes: invariably, the compilation of pharmacopeias, the establishment of drug registration procedures, and the implementation of modern quality and safety standards have been the most essential feature of Asian medicines' transformation into industries (Kloos et al. 2020) and market commodities (Coderey and Pordié 2019), and thus also constitute a major focus of this book (see Chapters 1, 3, 5, and 10). Yet besides the commonality of similar historical trajectories and the centrality of regulation and standardisation regimes, it is also possible to identify a number of other features that characterise contemporary Asian medicines as industries, that enable comparison between them, and that make it possible to consider them as a larger phenomenon.

To begin with, Asian medical industries are *global in scope*: no longer merely local or regional phenomena, Asian medicines today are known and consumed all around the world, which is directly connected to their industrial development. Thus, stakeholders from individual practitioners to large corporations and governments actively seek to create and supply not only domestic demand but also export markets across the globe for Asian medical expertise and products (e.g. Hsu 2009; Zhan 2009). In order to succeed, pharmaceutical producers often need to shift to increasingly large-scale mass-production, as well as engage with “regulatory globalisation”

(Kuo 2015) by complying with international food and drug standards (see Kudlu, this volume), trade agreements, and intellectual property regimes (see Madhavan 2017). Similarly, producers are forced to increasingly diversify and globalise their sources of pharmaceutical raw materials, whose price and availability are subject to international market fluctuations and biodiversity protection regimes (see Campinas, Dejouhanet and Sreelakshmy, and van der Valk, this volume). A single Tibetan or Ayurvedic pill may contain herbs and minerals from several different regions, countries, and even continents, and Asian medical practitioners and their patients frequently traverse multiple national boundaries and legal contexts to offer or receive treatment. Asian medical industries are thus not only global in scope but also *transnational in constitution*: they are fundamentally made in and through translocal encounters and entanglements (Zhan 2009), assembling elements (actors, ingredients, knowledge, technologies, etc.) from many different places (see Blaikie and Craig, this volume). Recent efforts by Chinese and Indian representatives to open “Tibetan” medical centers in Siberia in order to secure medicinal plant supplies and cheap pharmaceutical labor to supply their own TCM and Ayurveda markets are only one illustrative case in point. As industries rather than epistemic systems, finally, Asian medicines are also increasingly being recognised and taken seriously for their potential role in global health (WHO 2008, 2013), further underscoring their recent shift in status and scope (Kloos 2020).

Secondly, Asian medical industries are *based on capitalist logic*, even as they remain partially rooted in non-capitalist – often religious – value systems. While this does not mean that economic profit-maximisation has become their sole logic and driving force – quite to the contrary, many practitioners and institutions strongly resist such commercialisation on ethical or religious grounds – their existence is nonetheless predicated upon capitalist forms of health care (Nichter 1996; Kloos 2021). Money may be considered as morally problematic but has at the same time become the prime index of ethical, social, and professional value. Whether profits are used for personal gain or reinvested in charity, public health, or the expansion of medical services is beside the point here: they need to be made for Asian medical industries to function. Facilities and labour for pharmaceutical mass production, compliance to quality control regulations, drug registration procedures, or national and international distribution networks are expensive and demand capital investment. As Asian medicines are increasingly integrated into official health care systems and policies, even non-industrial, individual practitioners or pharmaceutical producers find themselves with little choice but to participate in the money economy (Hofer 2018; Pordié and Kloos 2022). As the contributions by Chee, Futaya and Blaikie, Madhavan, van der Valk, and Kloos in this volume show, it is no longer possible to study Asian medicines as a cultural domain outside of, distinct from, or even antagonistic to a supposedly uniform, global, and non-cultural capitalism. Rather, as John and Jean Comaroff (2009) and Anna Tsing (2015) point out, it is the mutual

incorporation of culture and capitalism (and, one might add, medicine) in the widest sense of the word – each transforming and becoming part of the other – that needs to be a central focus of any serious work on contemporary forms of capitalism. Critical explorations of Asian medical industries can thus offer a unique perspective on ongoing socioeconomic changes in Asia.

Third, Asian medical industries revolve around the object of the drug, which is to say that they *function through processes of pharmaceuticalisation*. While non-pharmaceutical interventions like acupuncture, cupping, massage, or dietary and behavioral counseling are important parts of these industries, especially in contexts where herbal drugs cannot legally be prescribed or sold, there is no doubt that the industrialisation of Asian medicines is closely related to a global trend of reducing health care to pharmaceutical interventions (Biehl 2007; Banerjee 2009; Kloos 2017a) and economic logics (Adams 2013; Gaudillière 2014a; Gaudillière and Sunder Rajan 2021). As a consequence, the development, production, distribution, sale, and regulation of drugs, as well as their safety, efficacy, and availability have become central concerns of contemporary healthcare industries, including Asian medicines. Numerous studies on Ayurvedic reformulation practices (e.g. in Pordié and Gaudillière 2014a) or Good Manufacturing Practices (GMP) in Tibetan medicine (Craig and Adams 2008; Craig 2011; Saxer 2012), not to mention a large body of clinical/pharmacological research on the safety and efficacy of individual Chinese, Ayurvedic, or Sowa Rigpa drugs (Zhang et al. 2009; Li et al. 2013; Reuter et al. 2013), serve to underscore this point. This trend of pharmaceuticalisation has been accompanied by a growing interest in an “anthropology of pharmaceuticals” (van der Geest et al. 1996), which has moved from an initial focus on the social lives of medicines (Whyte et al. 2002) to more serious considerations of their materiality (Blaikie et al. 2015). Virtually all chapters in this volume trace, directly or indirectly, such processes of pharmaceuticalisation and reveal them as foundational to the emergence and functioning of Asian medical industries.

Fourth and directly connected to this, Asian medical industries *rely existentially on natural ingredients* consisting mainly of plants but also animal substances, minerals, and metals. Indeed, such natural ingredients are commonly perceived and presented as their main distinguishing feature and advantage compared to synthetic biomedicines and constitute an important factor of Asian medicines’ commercial success. Yet, at the same time, this reliance also exposes the industry to attacks regarding the real or alleged use of endangered animal species (Chee 2021) and to serious shortages of essential raw materials (Dejouhanet 2014). While a part of Asian medicines’ *materia medica* consists of commercially cultivated (and therefore widely available) plants, a significant number of herbal ingredients continues to be wildcrafted and traded through complex and often informal networks. As Campinas, Dejouhanet and Sreelakshmy, and van der Valk describe in this volume, the availability of such raw materials is impacted not only by unsustainable harvesting practices, environmental degradation, and

climate change but equally by international biodiversity protection regimes, national bureaucracies, and diverse socioeconomic factors on the local and regional level. At the core of Asian medical industries thus lies an unresolved tension between rapid industrial expansion on the one hand, and diminishing supplies of ingredients on the other, fuelling further attempts at regulation, experiments with cultivation, the globalisation of supply networks, widespread pharmaceutical reformulation, and even practices of counterfeiting and corruption. Yet despite their industrial expansion and the use of non-local ingredients, Asian medical industries remain embedded in, and shaped by, the social ecologies (Craig 2012) of particular places and their interdependent cultural and natural environments. Indeed, as uncultivated plants become valuable commodities through the application of cultural expertise, previously marginal places and communities are rendered central sites not, as is often the case, of primary sector resource extraction but of sophisticated knowledge industries.

Fifth, besides their economic dimension but closely related to it, Asian medical industries have high *symbolic and political value as key sites for the promotion of (postcolonial) nationalist interests*. While this was already the case for most Asian medicines well before their industrialisation, and indeed contributed to their modern development (Prakash 1999; Taylor 2005; Banerjee 2009; Kloos 2011; 2017b; Lei 2014), today it is precisely their economic success and increasing scientific legitimacy that translate back into the symbolic and political realm. More than ever, Asian medicines today symbolise, *as industries*, their nations’ cultural identity, intellectual genius, and political/economic success. In contrast to earlier periods, however, they now do so from a position of economic strength rather than marginality. Imbued with real economic and political power, they have become more than just symbols: although still serving larger political purposes, they now also utilise national identities and politics for their own economic interests. The issue of *nation branding*, analysed by Kudlu in this volume, thus works in two directions: national identities are used to brand and market Asian medical products, while their industries are also involved in producing, branding, and marketing Asian ethnic and national identities (cf. Comaroff and Comaroff 2009). At times, this conjuncture of political and economic value and interests can lead to the creation of separate traditions and industries along national lines, such as “Tibetan,” “Mongolian,” or “Sowa Rigpa” medicine in China, Mongolia, and India, respectively, or even to competing UNESCO applications for “cultural heritage” status for the same medical tradition.

Sixth, such nation branding and market competition notwithstanding, Asian medical industries *cannot be demarcated by stable boundaries* in the same way as Asian medical systems. Indeed, the very attempt to delineate these industries as distinct “bodies” or “systems” is a futile exercise. The above-mentioned connections between herbal and biomedical pharmaceutical industries involving Asian medicine-derived ingredients like

artemisinin or shikimic acid are a case in point. Other examples include Chinese medicine companies who produce Mongolian medicines, vitamins, or even biomedical drugs alongside Chinese proprietary formulations; Indian Ayurvedic firms who manufacture and market all kinds of non-classical Ayurvedic products, from toothpastes to beauty creams to plant fertilisers, under the label of “traditional Ayurveda” (Khalikova 2017, 2020); or the Japanese *haichi* medicine industry described by Futaya and Blaikie in this volume. The partial disappearance of dividing lines between what can or cannot be considered as Chinese medicine, Kampo, Ayurveda, or Sowa Rigpa is also reflected in the heterogeneity and unreliability of economic figures concerning the size of Asian medical industries. For example, the size of the Chinese medicine industry in China in 2016 was variously reported as 25 billion USD (ibisworld.com 2021), 68 billion USD (Frost and Sullivan 2016), or even over 130 billion USD (Dang et al. 2016), showing a variation of almost 100 billion USD. While there are a number of explanations for such inconsistencies, including the relatively poor regulation of the industry and widespread over- and underreporting of economic data, at their root lies the very fluidity of this industry’s limits and the different statistical inclusion/exclusion criteria that result from it. Instead of defining Asian medical industries, against all evidence, as stable and coherent epistemological and territorial bodies, it makes more sense to understand them in terms of *partially overlapping pharmaceutical assemblages* (Kloos 2017a), which may share certain elements with biomedicine and each other.

To be sure, practitioners and patients usually do have clear ideas and concerns about the boundaries of their medical systems⁶ – what qualifies as “real” Chinese medicine, Ayurveda or Tibetan medicine – and so does, implicitly, a large body of scholarly literature problematising issues like hybridity, syncretism, or an epistemic clash between tradition and modernity (Nandy 1988; Bhabha 1994; Ernst 2002). Yet Asian medical industries increasingly displace classical notions of purity and authenticity into techno-legal and economic registers, as when their purity is defined and measured in terms of pharmaceutical quality control, and their authenticity becomes a matter of marketing strategies. Rather than being problematised as a deviation from a norm, hybridity and syncretism are increasingly idealised as lucrative innovation strategies or transcended in the development of entirely new products. The internal coherence and historical continuity of Asian medicines have thus almost imperceptibly morphed from supposedly established facts into open-ended processes requiring constant attention and work. It is precisely the productive tension created by the partial disappearance of distinct boundaries between various Asian medicines on

6 The exact locations of these boundaries as delineated by practitioners change over time, despite frequent claims about their stable nature.

the one hand, and the increasing political and economic value of distinct ethnomedical identities on the other, that informs contemporary efforts of (re-)organising Asian medicines and revising their historiographies to ensure their intellectual/structural coherence and historical continuity in radically changed circumstances.

Asian pharmaceutical assemblages

Understanding and studying Asian medicines as industries constitutes not so much a change of terminology than a change in approach and perspective. It is not that terms like medical systems, tradition, modernity, authenticity, or purity have disappeared or become irrelevant, but they have shifted registers, lost their assumed stability, and acquired new and often provisional meanings and functions that are explicitly used by and within the industry. Having thus become part of the phenomenon in question, they can no longer serve well as analytic or descriptive concepts but rather need to be problematised – and taken seriously – as elements of ethnographic reality and historical change. This, and the sheer size, heterogeneity, and novelty of Asian medical industries, raises important methodological-conceptual questions: how can we understand, explore, and engage with contemporary industrial Asian medicines? What is the best way to analyse their emerging forms and larger role, trace their evolving development in real time, and contextualise them in the contemporary world? It is clear that any scholarly engagement with this topic must, first and foremost, rely on fine-grained, locally grounded empirical research. At the same time, it is crucial that such research also addresses and makes visible the larger shape and dynamics of Asian medicines today; analytically accounts for the multiple, at times conflicting, and frequently shifting parts and dimensions of Asian medical industries; and contextualises them within ongoing Asian and global socioeconomic, political, scientific, and health developments.

One methodological/analytic framework for combining empirical attention to local and historical specificity with a focus on the bigger picture is the *pharmaceutical assemblage* (Kloos 2017a), which provides a productive model for understanding the distinctive features of Asian medical industries. Defined as a contingent ensemble of different elements, which may include people, things, practices, knowledge, interests, or values that may not be reducible to a single logic (Collier and Ong 2005) and may even appear incommensurable, the assemblage is centrally marked by an ongoing process of deterritorialisation and reterritorialisation (Deleuze and Guattari 1980; Sassen 2008). More specifically, *pharmaceutical assemblages* refer to constellations that emerge through the de- and reterritorialising effects of pharmaceuticalisation where, for example, elements of Asian medical knowledge, modern technoscience, capitalist interests, cultural markers, religious discourses, nationalist politics, local ecologies, and global regulatory systems

come together in new and evolving forms. Besides providing a coherent analytic frame for entities with heterogeneous elements and fluid identities/boundaries on a territorial axis, the pharmaceutical assemblage's temporality is emergent and open-ended. All of this applies directly to Asian medical industries, which – despite having acquired considerable size and force over the past twenty years – are still in a formative phase characterised by a continuous process of inclusion and exclusion of materials, knowledge, discourses, people, and institutions. Not yet stabilised into more permanent apparatuses, their medium- and long-term future remains indeterminate. While relying on fine-grained local data, using the concept of the pharmaceutical assemblage enables us to account for the heterogeneous parts and dimensions of Asian medical industries, grasp their larger shape and dynamics, and contextualise them as a distinct and powerful phenomenon in contemporary Asia and the world.

Due to these characteristics of emergence, indeterminacy, and fluidity, assemblages can be difficult to grasp, which may explain the dearth of research on Asian medical industries. Consequently, we need concrete empirical and analytical vantage points from which to approach and explore them. The pharmaceutical assemblage defines four such vantage points, which are also central domains of inquiry of this volume: raw materials, pharmaceutical production, the market, and intellectual property rights. Thus, one chapter in each of this volume's three sections (Campinas, Dejouhanet and Sreelakshmy, van der Valk) directly addresses the domain of raw materials, presenting not only original data but also critically innovative approaches to understand this existential foundation of Asian medical industries. More indirectly, this topic is also dealt with in the chapters by Madhavan and Soman, Blaikie and Craig, and Kloos. Similarly, a number of chapters in each section (Chee, Futaya and Blaikie, Madhavan and Soman, Blaikie and Craig) approaches Asian medical industries through the vantage point of pharmaceutical production, providing unique insights into how Asian medicines are – in a literal, material sense – assembled today. The central role of the market in shaping as well as regulating Asian medicines and their industries is explored by all chapters, but perhaps particularly so by Arai et al., Futaya and Blaikie, Madhavan, and Soman, and Kloos. The role of Intellectual Property Rights, finally, is less directly visible in the context of this volume, but nonetheless addressed as a significant presence by Chee, Arai et al., Kudlu, and Madhavan and Soman. As all chapters demonstrate clearly, these four domains are so interconnected that none of them can be considered in isolation from the others. Behind all of this looms the state as a dominant force determining the form and development of Asian medical industries (see especially Kloos), an observation further taken up by Blaikie in conclusion.

It is clear that the size, complexity, and dynamics of Asian medical industries cannot be adequately explored and understood by one discipline – or, indeed, one book – alone. Consequently, this volume consciously adopts a multi-disciplinary approach, assembling contributions and insights from

medical anthropology, history, economics, geography, pharmaceutical science, and ethnobotany, not merely across but in many cases also within its chapters. Yet multidisciplinary alone is not sufficient without a larger aim and purpose. The larger aim of *Asian Medical Industries* is to move toward an integrative approach to health and medicine, which does not rely on an outdated separation of modern and traditional. This volume thus carries forward the efforts of Sean Lei (2014), Volker Scheid (2002) and others to overcome this separation and the resulting divisions of intellectual labor – in Lei's case, referring to histories of biomedicine in China and histories of traditional Chinese medicine, each virtually independent from the other – that prevent us from understanding Asian medicines as constitutive parts of modern Asia. Indeed, when we begin to study Chinese medicine, Ayurveda, or Sowa Rigpa not as instances of “traditional culture,” but as dynamic, transnational industries of significant public and global health relevance, social science explorations of contemporary healthcare, biotechnologies, pharmaceutical regimes, or global health acquire a new and as-yet unexplored dimension. By placing Asian medical industries on the same conceptual level as biomedical industries, we are able to expand the reach of analytic tools developed by scholars of biomedicine, biotechnology, or global health by applying them to Asian medicines and vice versa. Beyond enabling radically new questions and perspectives, this integrative approach is also informed by an underlying postcolonial agenda of decentering familiar tropes and concepts (by means of de- and reterritorialisation), something that is underscored by the diverse backgrounds of this volume's contributing authors. The field of Asian medical industries is vast, and so is the theoretical potential of scholarship concerning it. The present volume can only be a small step towards exploring this new territory, but if it manages to place Asian medical industries more firmly on the scholarly map and sketch, however provisionally, a possible conceptual approach to critically engage with them, its purpose is served.

Chapter outline

This book's ten main case studies are divided into three regional sections: East Asian medical industries, South Asian medical industries, and Sowa Rigpa industries. The first and largest section includes two chapters on Chinese medicines in different regions of China, as well as one chapter each on *Kampo* and *haichi* medicine in Japan. In Chapter 1, Liz Chee combines archival and ethnographic research on a pharmaceutical company in Guangzhou, South China, to explore the role of both modern science and the state in the invention and production of “authentic” Chinese medicines. She argues that while Chinese medicine is increasingly subject to scientific standards, the ambiguity of Mao's policies continues to shape pharmaceutical innovation, manufacturing, and regulation processes today, resulting in a plethora of non-pharmaceutical health product or food categories.

In Chapter 2, Manuel Campinas focuses on medicinal plants among Qiang ethnic minority communities in Sichuan to illustrate the connections between dwindling raw material supplies, the Chinese medicine industry, China's minority policies, and its agricultural development strategies. Assembling ethnographic data from a range of different contexts, he shows how efforts at creating a "Qiang" ethnic medicine industry are irrelevant or even detrimental to the rural communities and environments they are supposed to benefit. In Chapter 3, Ichiro Arai, Julia Yongue, and Kiichiro Tsutani trace the revival of Kampo medicine and its integration into Japan's national health care system since the 1960s. Analysing both domestic and international factors for the application of biomedical regulations ("Good Practices," or GxP) to Kampo medicines, they argue that this regulatory integration was central to the development of a successful Kampo industry. In Chapter 4, Tomoko Futaya and Calum Blaikie provide deeper historical insights into the evolution of the *haichi* pharmaceutical industry of patent household remedies including local herbs, Kampo formulas, and (later) biomedical ingredients in Japan's Toyama prefecture. They show how *haichi* medicines needed to be reinvented, transformed, and hybridised in order to maintain their legitimacy and marketability under changing political and economic conditions, laying the foundations for what would become the largest pharmaceutical production zone in Japan.

The second section, on South Asian medical industries, contains three chapters exploring different aspects of the Ayurveda industry in India. Chithprabha Kudlu's Chapter 5 offers a new perspective on Ayurveda's commodification, industrialisation, and globalisation, exploring how the Ayurvedic industry is affected by frictions between state-envisioned homogenising tendencies inherent in the global promotion of Brand India and the heterogeneous reality of Ayurveda's actual constitution and its domestic market. She argues that contemporary industrial Ayurveda no longer serves as an instrument for nation *building* (as it had as a medical system), but as a resource for nation *branding*, revealing the complex entanglements between politics, local and global markets, cultural identity and health care that shape Asian medical industries. Chapter 6 by Harilal Madhavan and Sajitha Soman explores some of these issues in the specific case of CARE Keralam, an Ayurvedic industrial cluster in the South Indian state of Kerala. Tracing the cluster from its inception through its top-down implementation to its ultimate failure, they argue that the under-achievement of its laudable aims can be explained by the structure of the Ayurvedic industry itself and a misunderstanding of the differential needs of small, medium, and large firms in terms of innovation, raw materials, and research and development. The case of CARE Keralam and its eventual failure thus provides an important look underneath Ayurveda's smooth official representations and grand development plans, reminding us of the complex local assemblages that constitute Asian medical industries. Remaining in Kerala, in Chapter 7,

Lucie Dejouhanet and Sreelakshmy M. provide a detailed analysis of the local and regional raw material supply networks the Ayurvedic industry existentially depends on. Describing the complicated itineraries of Ayurvedic plants from their wild collection to the factories, they show how new collection and procurement practices emerge as the industry's growth puts increasing pressure on limited natural resources. As a consequence, the generally close connection of the Kerala Ayurvedic industry to its social environment is counterbalanced by its progressive disconnect from its natural environment, providing an additional layer of complexity to an already entangled industry.

The volume's third section consists of three chapters on Sowa Rigpa industries in India, Nepal, and Mongolia. In Chapter 8, Jan van der Valk traces Tibetan medicinal plants back from the pharmaceutical factory to their suppliers in North India in order to highlight the complexities surrounding plant cultivation, trade, and conservation in Sowa Rigpa (and, by implication, other Asian medical) industries. Critically describing practices of corruption, bribery, and illegality that form the alter ego of the state-sanctioned herbal sector, he argues that raw material sourcing is often characterised by convoluted legislative and moral grey zones, giving a seemingly magical quality to what he calls "sourcery." In Chapter 9, Calum Blaikie and Sienna Craig explore the emergence and contemporary dynamics of a Sowa Rigpa cottage industry in Nepal. They argue that while Sowa Rigpa in Nepal offers a point of contrast to the much larger Sowa Rigpa industries in China, India, Bhutan, and Mongolia, it is also exemplary of the ambivalent attitudes vis-a-vis industrialisation among Sowa Rigpa practitioners throughout the region. Nepal's Tibetan medicine production thus offers a unique perspective on the Sowa Rigpa industry in Asia, in which skilful, personal involvement in all stages of medicine making remains highly valued despite an increasing transition to pharmaceutical mass production. Moving from the southern to the northern edge of the Sowa Rigpa world, Stephan Kloos's Chapter 10 provides historical and ethnographic insights into the development and status quo of the Sowa Rigpa industry in both Mongolia and Inner Mongolia. Following processes of Mongolian medicine's de- and reterritorialisation through different periods of communism, liberalisation, and industrialisation from the 1930s up to today, he argues that both the Mongolian and Chinese states have played a crucial but ambivalent role in the emergence of a Mongolian medicine industry.

In the conclusion, Calum Blaikie connects and compares the case studies presented in the ten chapters, and in doing so, revisits the main aims and arguments of this volume. In particular, he identifies the role of the state, regimes of regulation and reformulation, and raw material supplies as the three central domains cutting across all chapters as well as the various Asian medical industries they explore. In a final theoretical step, Blaikie asks what Asian medical industries – as a concept and a subject of inquiry – can contribute to broader fields of scholarship that exceed individual disciplines

like anthropology, history, development studies, or economics, such as work on pharmaceutical and frontier assemblages or theories of industrialisation. In a productive way, the conclusion thus integrates the scholarship presented in this volume, which can be seen as an assemblage in and of itself, into broader conversations. At the most fundamental level, the contributions collectively show that the notion of Asian medical industries is more than just a new label for old wine. Rather, Asian medicines and their industries are an increasingly prominent reality that transforms healthcare, economic and sociocultural landscapes across contemporary Asia and the world, and it is high time to give them sustained and serious scholarly attention.

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Part I

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