THE UNIVERSITY OF CHICAGO

STAGING EFFICACY: CANCER TREATMENT IN CONTEMOPRARY CHINA

A DISSERTATION SUBMITTED TO

THE FACULTY OF THE DIVISION OF THE SOCIAL SCIENCES

IN CANDIDACY FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

DEPARTMENT OF ANTHROPOLOGY

BY

MIAO JENNY HUA

CHICAGO, ILLINOIS

DECEMBER 2020

TABLE OF CONTENTS

List of Figures

ACKNOWLEDGEMENTS

Research for this dissertation would not have been possible without the generosity, openness, and boundless patience of clinicians and patients in Wuhan, especially at what I call “University Hospital.” They made their workplaces and, sometimes, homes available for my constant intrusion over many months. “Dr. Wen” fielded my “SOS” calls when I arrived in Wuhan in the middle of summer on a largely deserted campus. Members of the University Curriculum Office were reliable sources of support and guidance when I encountered logistical issues. “Dr. Zhao,” “Director Yi” and the staff physicians of the Department of Oncology as well as “Dr. Sun” and the physicians of the Department of Integrated Medicine taught me as one of their own. The sense of adventure that “Qin Chuan” brought to practicing medicine was a wellspring of inspiration. Her friendship and intellectual partnership has opened up my imagination to what’s possible in contemporary Chinese health care, and her clinic became a second home.

The graduate students of the integrated medicine department regularly extended me the warmth of their friendship. Their company was a highlight of my field experience, and their frank commentaries shed light on the many subtleties of a seemingly ever-changing medical education and health system. “Zhu Rui” consistently offered one of the most interesting perspectives on integration, teaching me as much about oncology as her home discipline of Chinese medicine. It was my good fortune that our time at University Hospital overlapped. I will look back fondly on our impromptu *taiji* sessions. I also have her to thank for introducing me to her teacher, “Dr. Liang” at the Hubei Provincial Hospital of Traditional Chinese Medicine, who I appreciate for providing key insights on practicing oncology as a Chinese medicine physician.

Professor Hu Kaiwen at Dongfang Hospital in Beijing generously opened up time in his busy schedule for interviews and for showing me the ropes in his department. Professor Li

Saimei at the Guangzhou University of Chinese Medicine introduced me to her inimitable pedagogical and clinical style. I treasure the insights she unreservedly shared on the classical formulas of Zhang Ji and the company of her globetrotting circle of students and admirers.

I have my teachers at the University of Chicago to thank for their decisive feedback throughout this project and their own trailblazing works. Judith Farquhar's work expanded the horizon of Western imagination for Chinese medicine's practical logic. Her input always pushed me for the better. Kaushik Sunder Rajan showed by example the importance of intellectual honesty in making critical interventions. My conversations with Michael Fisch were invariably rich with the foment of fresh ideas. Sean Brotherton struck the perfect balance of challenging and encouraging, with an uncanny ability to always say exactly what I needed to hear. I cannot thank him enough for shaping my intellectual identity, nor apologize enough for the number of drafts that he's had to go through.

Numerous friendships sustained me through the many seasons of graduate school, including a few long winters. An exhaustive accounting would be impossible. I am immeasurably grateful for the kindness and brilliance of Andrea Ford and Karma Frierson. Colin Halverson's wit and curiosity is always a source of delight. Adam Baim was an impeccable guide and fellow-traveler in navigating a dual graduate degree. Friends of the "Medicine, Body and Practice" as well as the "Medicine and Its Objects" workshops, where multiple drafts of these ideas were discussed formally and informally, provided a wise and gentle forum. Friends of the East Asia reading group and co-conspirators of the "Asia as Action" conference spurred me to always try to think from the perspective of our colleagues overseas. The friendship and insights of Yukun Zeng, Britta Ingebretson, Zhiying Ma and Hiroko Kumaki continue to prove vital. A great deal of gratitude is owed to my friends from medical school. Hannah Lee, Sarah

Hershman and Svetlana Kozlovich, who helped me realize the implicit connections between my research in China and the clinical world we confront in the U.S. Renslow Sherer, Ivy Jiang, Hongmei Dong, Jon Lio and Jingyi Fang helped build the bridge between these clinical worlds. No less important to me are the bridges that Lili Lai has built from Beijing.

The seeds for this project were planted too early for me to recall. I have my parents, Dichen Hua and Miao Tang, and grandparents, Mi Yunjuan and Tang Shengsu, to thank for imparting upon me a curiosity in Chinese medicine and society. Their love and support enabled me to embark on this decade-long project with little hesitation. Writing this dissertation was made infinitely more enjoyable by sharing the couch day after day with Risi Kondor, whose love and partnership is life-giving.

My grandfather Tang Shengsu's remarkable brush-up against cancer and experimentation with Chinese medicine thereafter provided the earliest inspirations for this work. An irrepressible idealist and intrepid tinkerer, this project is dedicated to his memory.

INTRODUCTION

Staging Efficacy, Case by Case

Tea, Tobacco and the Stage of Cancer

The smell of tobacco, snuffed out moments before I arrived, lingered in the office of the nominally retired oncologist, Dr. Zhao Yide. As I sat down, Dr. Zhao reached into his bookcase for a jar of tea leaves ("The season's first harvest") and measured out a spoonful while the electric kettle turned on moments ago started to whistle. Before long, I held a small paper cup full of green tea. Dr. Zhao sat down behind his large rosewood desk, waiting for me to begin. Over six meetings in six weeks, this small ritual had become routine.

An oncologist who entered medical school in 1962 and retired in 2013, Zhao Yide spent over a decade of his career as the director of one the largest and most reputable hospitals in Wuhan and all of South Central China. To protect the anonymity of my interlocutors, I refer to this institution as "University Hospital." At University Hospital, Dr. Zhao opened doors for me, an anthropologist and student of Western medicine doing research on integrated medicine in China, including quite literally the door to his office.

In over eight hours of interviews, one comment stood out to encapsulate this venerable oncologist's attitude toward China's traditional medicine: "Nowadays, it would be irresponsible for any doctor to treat early-stage cancer with Chinese medicine." This comment made straightforward sense when I first heard it. "Early-stage cancer" usually falls in the province of surgeons wielding scalpels or oncologists armed with ionizing radiation to carve out the malignant mass. Later, when cancer has to be kept in remission or when it has become too advanced to cure, surgery, radiation and chemotherapy are often paired with Chinese herbal

medicines. Chinese medicine's relatively secondary role in cancer treatment is reflected in the broader institutional landscape of Chinese health care.

In the mega-hospitals of Chinese mega-cities, the professional ranks of Western medicine doctors have swelled and their inpatient wards expanded in the last three decades to greatly overshadow those of their Chinese medicine colleagues.[1] Plant, mineral and insect-based remedies culled from the ancient writings made for good-enough measures in a time of scarcity and limited scientific expertise. However, as post-1978 medicine in China opened up to modern technological standards, older ways of healing are becoming increasingly supplementary to high technology cures. It seemed like Dr. Zhao was saying, "nowadays, there is a limit to how much we oncologists rely on Chinese medicine." This is especially the case in oncology, one of the most economically and epistemically consequential subfields of biomedicine.

Months later, upon reviewing my records, Dr. Zhao's matter-of-fact comment became more puzzling. While mega-hospitals in Wuhan, Beijing and Guangzhou all seemed uniformly massive, even alienating, they were by no means monolithic. In each, I saw idiosyncratic intermixing Chinese and Western remedies for the treatment of cancer, blurring porous, bendable yet undeniable lines between highly distinct styles of clinical practice. Importantly, most of these modes and methods of intermixing were pushed for by patients seeking treatments for improved chances of recovery or just relief from their symptoms. With these scenarios in mind, it became more difficult to interpret Dr. Zhao's comment as an affirmation of biomedicine's undisputed ascendancy.

[1] Official statistics indicate that only around 13 percent of physicians and physicians' assistants are registered in Chinese medicine or integrated medicine in 2016 (NHFPC 2017, 42). In the 1950s, in comparison, there were more registered Chinese medicine doctors than western medicine doctors.

Dr. Zhao was by no means in the anti-traditional medicine vanguard.[2] He repeatedly drew on the language of Maoist materialism to describe Chinese medicine as a system of primitive dialectics (*pusu bianzheng fa*) refined over the course of five thousand years of Chinese culture.[3] The problem is not that its medicinal effects lack a material basis, he said, but that it is not based on current criteria of biomedical evidence. Referring to the tea we were sipping, Dr. Zhao alluded to the difficulty of separating out the hundreds of classes of compounds contained in a single leaf of green tea, depending on where it was cultivated and how it was processed, and investigating the pharmacological activities of each. Yet, Chinese people do not wait for the weight of scientific evidence to tip the scale before imbibing tea for its wholesome goodness. Chinese herbal medicines made out as a combination of different herbs are even more complex than a leaf of tea, and experimental efforts have so far only scratched the surface.

Dr. Zhao and some of his best students have engaged in research of just this sort when they studied the efficacy of extracts made from the dried root of *Angelica sinensis* (*danggui*) for treating pulmonary fibrosis, a common and often fatal adverse effect of irradiating the lungs. With promising experimental results in mice but no large-scale human trials, *danggui* injections were nonetheless regularly used at University Hospital in human patients up until the mid-1990s. During a wave of safety inspections in the 1990s, the provincial health bureau shut down the on-

[2] One prominent physician at University Hospital kept the collected works of Yu Yan, an early-20th century anti-traditional medicine activist, on his bookshelf, and pointed it out to me when I described my research project as necessary reading. On the Chinese internet, there are also plenty of vocal critics who aggressively attack Chinese medicine as pseudoscience. But even most Chinese physicians of Western medicine would distance themselves from such a view. See the famous Chinese pulmonologist Zhong Nanshan's response to Fang Zhouzi's anti-traditional medicine views (Huang 2010).

[3] Without excluding the possibility that Dr. Zhao has read Mauss and Durkhem's *Primitive Dialectics*, it is more likely that he borrows the term from Chinese philosophers including Guo Muoruo who described ancient Chinese agonistic philosophy (with its conventional ur-texts of *Yi Jing* and *Dao De Jing*) as a materialist dialectic.

site drug-manufacturing factory at the University Hospital for not meeting manufacturing standards. Then or now, Dr. Zhao would not simply dismiss the efficacy of Chinese medicines.

If Dr. Zhao's attitude toward Chinese medicine is not one of outright dismissal, surely his statement can be heard as the biomedical bottom-line? Chinese medicine may have its utility, as long as its use is circumscribed and regulated by biomedicine. Plausible enough, but this interpretation opens up political and epistemic cleavages within biomedicine rather than shore up its unquestioned validity in China today.

A bit of personal history helps to underscore the ambiguity here. When he graduated from medical school in 1965, on the eve of the Cultural Revolution, Zhao Yide was a beneficiary of radically overturned institutional norms that paved the way for him, the son of a peasant, to become the leading physician at a top hospital in Hubei province when peers with better test scores and urban residency status were assigned to lesser institutions. Decades later, during the reform era that ushered the nation into a period of economic liberalization, Dr. Zhao was among the first generation of doctors since 1949 to receive professional training in the West. He studied in France for six years, returning in 1991 to lead his department, perhaps especially because some of his peers defected after the trauma of the Tiananmen Square protests and government crackdown of 1989. Despite having been at the helm of the most respected oncology department in Hubei province, Dr. Zhao finds little solace in the reputation he helped build. He is soberly aware of how outcomes in cancer treatment have hardly improved during his tenure.

Dr. Zhao repeatedly took to criticizing the post-Mao decline of public health and preventive infrastructure as market capitalist forces fragmented the state medical system into an archipelago of hospitals competing for patients as market shares. Large hospitals became even bigger by acquiring new technologies and selling its high-tech services for profit. As new

chemotherapeutic agents, linear accelerators, and, more recently, targeted cancer drugs enter the Chinese market, cancer is no longer an incurable blight that physicians loathed to treat. Rather, oncology has become one of the most professionally rewarding and lucrative specialties for young Chinese physicians.

All semblance of progress breaks down on the side of prevention. The first cancer registry in China was not created until 2002. There are currently no national screening programs for any type of cancer. For Dr. Zhao, the havoc wreaked by market reforms on a nascent preventive infrastructure confronts him as the daily reality of several hundred patients suffering from advanced or metastatic cancer filling up his inpatient ward. Even more perversely, his department derives momentum for growth the more a preventive infrastructure is stifled. In the absence of coordinated efforts to rally experts and ordinary citizens in carrying out large-scale screening programs, as was done from 1958-1978, the vast majority of cancers are now "caught" only when individual patients walk into the hospital with noticeable symptoms. Malignant tumors show up in the hospital almost exclusively as late-stage cancer. Undercutting the claim that Chinese medicine has no role to play in early-stage cancer is the concomitant proliferation of late-stage cancers that fuel the rise of large hospitals increasingly synonymous with Western medicine in contemporary China.

Perhaps there is no better reminder of biomedicine's ironic impotence than the smell of tobacco in the air every time I walked into Dr. Zhao's office. Smoking among mostly male Chinese oncologists is shockingly common.[4] Like liquor, tobacco is an important medium for the

[4] See Kohrman (2008) on the centrality of cigarettes in the sociality of predominantly male cardiothoracic surgeons in China who spend many of their days cutting out lung tumors. Pressure on local governments to generate tax revenue from tobacco sales increased after the death of Mao in 1976. "From the late 1970s to the mid-1990s, the percentage contribution to state

passing of patronage and reciprocity that open up opportunities for professional advancement and bring in business. Young doctors I didn't know were smokers lit up during dinners with pharmaceutical representatives. I've only had the opportunity to witness Dr. Zhao, a chainsmoker vehemently opposed to doctors dallying with pharmaceutical companies for kick-backs, smoke alone in his office or at the margins of social gatherings. It felt to me as if the habit of the old doctor embodied the futility of knowing much but being able to do so little — of bloodless statistics failing to translate into effective action.

Indeed, while the scope of Chinese medicine in cancer treatment is limited, the methods of Western medicine also do not provide stable reference points for demonstrating efficacy. Materials as contingent as the flavor of tea and the smell of tobacco inform the evidence and experience behind the apparently commonsensical. Paying attention to the contingent brings to relief the more intransigent stage on which they have been gathered — the stage of integrated Chinese and Western medicine.

Zhongxiyi jiehe: Integration of Chinese and Western Medicine

Zhongxiyi jiehe, usually rendered in English as "integrated Chinese and Western medicine" (integrated medicine, for short), is both the premise of this dissertation and its central problem. The knowledge and career of clinicians like Dr. Zhao Yide and, indeed, all clinicians in China, are inextricably intertwined with integrated medicine.

Before 1929, it could be argued that Chinese medicine (*zhongyi*) and Western medicine (*xiyi*) did not exist as separate and opposed fields of medicine in need of integration. That is to

revenue of China's domestic tobacco industry nearly tripled, making it the country's top tax generator by industry for several years running at millennium's turn" (p. 11).

say, attempts to reconcile observations made by Occidental anatomists and scholars with classical descriptions of the body in China were not absent; but they were restricted to episodic exchanges.[5] Contemporary historians of systemic encounter of Chinese and Western medicine, and hence a nascent integrationist project, to the mid-19th Century. During this period, the Confucian scholar-physician Tang Zonghai (1846-1897) advanced a concept of the "confluence" (*huitong*) of Chinese and Western medicines by borrowing freely from Western medical terminologies in his commentaries on the locus classicus of Chinese medicine, the *Huangdi Neijing*;[6] Zhang Xichun (1860-1933) published records of bold clinical experiments in blending Western drugs with Chinese herbal formula, still in print today; Yun Tieqiao (1878-1935) tried to correlate Chinese medical concepts with Western anatomy and physiology while defending the former's theoretical cohesion. Integration proceeded all but in name.[7]

In *Neither Donkey Nor Horse*, the historian Sean Lei argues that the struggle between Chinese and Western medicine entered white heat when the newly formed Chinese Ministry of Health convened for the first time to discuss abolishing the practice of Chinese medicine in 1929.

[5] Elman (2005) argues that it was in the mid-19th century, and mainly through British protestant missionaries entering South China through the port of Guangzhou, that Chinese medicine physicians began to take Western anatomy and physiology seriously. It was not unusual for Chinese physicians to cherry-pick from Western anatomy to suit indigenous interests and fuel ongoing debates between different styles of indigenous medicine. Also worthy of note, the medicine of Protestant missionary physicians was not obviously superior to Chinese medicine for most purposes until aseptic surgery under anesthesia was developed at the turn of the twentieth century.

[6] Zhao Hongjun's *Jindai zhongxiyi lunzheng shi* (*A History of the Struggle between Chinese and Western Medicine in the Modern Period*) first published in 1989 provides an overview of the discursive uptake of Western anatomy and physiology in the early 19th century (second edition, 2012: 66-80); See also Chinese Medical Association (2010, 33-35) for an internalist history of the confluence scholars. Lei's important monograph on of this same period focuses on Tang Zonghai as a representative of the confluence scholars (2014, 71-78).

[7] Both Lei (2014) and Andrews (2014) provide erudite accounts of the social and epistemic formation of modern Chinese medicine through 19th-century encounters with Western medicine.

The ministry's Central Board of Health consisted exclusively of Western medicine physicians resolved to use political means to quickly revolutionize the nation's health care despite their paltry numbers in China. Their goal utterly backfired, prompting geographically dispersed traditional practitioners to band together against and define their practice as the medicine of the new Chinese nation. The eclecticism of the convergence scholars gave way to an entrenched dichotomy. Efforts to bridge this dichotomy were seen as futile, as the resultant hybrid was thought to be a monstrous creation, "neither donkey nor horse," with no prospect of future transmission. The major rapprochement reached under the republican era was the founding of the Institute of National Medicine, a central administration for Chinese medicine that had the chief aim of systemically isolating and describing active pharmaceutical substances in the Chinese pharmacopeia using modern laboratory techniques (Lei 2014, 141-166; Croizier 1968, 89-99).

After the Chinese Communist Party took power in1949, the new regime almost immediately began shifting the state's official stance on Chinese medicine, elaborating an integrative health policy that made traditional medicine indispensable. In 1950, Mao Zedong put forth "unification of Chinese and Western medicine" (*tuanjie zhongxiyi*) as one of three guiding principles at the First National Meeting on Health care Work, together with "facing workers, peasants and soldiers" and "prevention first." The priorities were thereby set for a country of 540 million with an average life expectancy of 35-40 years. Confronting the mammoth task of controlling communicable diseases, improving sanitation, and ensuring universal health care, often by means of coordinated mass mobilization, had to rely on available talent. Traditional medicine practitioners outnumbered Western medicine doctors about 300 to 1 at the time (Taylor 2005, 30-33). Integration thus went hand-in-hand with a pragmatic orientation toward preventive care and public health.

Despite real efforts to place Chinese medicine on new institutional footing in subsequent years, licensing requirements and state reimbursement restrictions made it difficult for Chinese medicine to thrive under the first minister of health, a Western medicine physician named He Cheng. He faced criticism from Mao for his Western-centric policy in 1953 and resigned two years later. Mao personally took up the cause of Chinese medicine in 1954 in a concerted program of national rejuvenation encompassing multiple cultural spheres (Taylor 2005, 35-43).

Several developments ensued. An extraordinary "Western medicine doctors study Chinese medicine" program inaugurated in 1954 trained top graduates of Western medicine in traditional medicine for three years, symbolically and substantively elevating Chinese medicine above Western medicine for the first time in modern China. From 1954-1956, Chinese medicine doctors received state sanction to practice alongside Western medicine at all major hospitals in the country. Mao re-articulated a policy of "integrating Chinese and Western medicine" that would officially guide health policy from 1956 onwards (Taylor 2005, 63-65; Scheid and Lei 2014, 254-255; Chinese Medical Association 2010, 39). 1956 saw the founding of the Research Academy of Chinese Medicine in Beijing, and then several dozen research universities of Chinese medicine. Prominent Chinese medicine physicians became faculty at these universities and formulated the theoretical foundations of modern Chinese medicine, putting together the first national textbook for "traditional Chinese medicine" or TCM. They adopted the language of dialectical materialism (*bianzheng weiwu zhuyi*) to invent and establish *bianzheng lunzhi* or "pattern differentiation and treatment designation" as the defining theory and practice of TCM.[8]

[8] See Farquhar (1994b) for a detailed description and analysis of *bianzheng lunzhi* in action. See also Scheid (2002, chap. 7) for the historical background of the strategic coincidence in the language of dialectical materialism with that of pattern differentiation or *bianzheng* in theorizing the emergent pivot of clinical encounters that became foundational to TCM education.

Chinese medicine practitioners entered every level of the state health care system on an unprecedented scale during the second decade of the PRC.

From the mid-1960s until the end of the Cultural Revolution, as the Chinese Medicine Bureau under Ministry of Health was incorporated into the new Office of Integrated Chinese and Western Medicine, integrated medicine rose to become the only politically acceptable form of medicine. In broad strokes, it suffices to say that state-led integration in this period enrolled the masses to solve practical problems and override expert-led medical authority of either Chinese or Western varieties (Wei and Brock 2013, 45). Momentum gathered at the top echelons of state administration after 1965 for extending public health across the Chinese countryside, culminating in the training of 1.7 million "barefoot doctors" to administer vaccines, perform first aid and help manage minor illnesses for Chinese villagers (Hsiao 1995; Yang 2006, 513-514). During this period, integration consisted of two general tendencies depending on, in rough terms, an urban or rural context. In the countryside, it was possible that barefoot doctors trained by the state incorporated an eclectic mixture of traditional Chinese and local folk medicines into their regular practice (Yang 2006, 502-530; Wei 2013, 251-280), but also became conduits of Western medicine by enrolling patients into a state medical grid.[9] In urban institutions, many senior Chinese medicine physicians were dismissed. Higher education came to a standstill from 1967-1970, then resumed with a watered-down curriculum that truncated medical school to three years or less.

[9] Fang's (2012) historical study of health practices in one commune outside the city of Hangzhou argues that villagers became much more accustomed to antibiotics and injections, and the presence of barefoot doctors opened up the possibility of regular transfers to county hospitals. Without a sufficiently delegated mid-tier monitoring role, township-level clinics were gradually hollowed out, concentrating clinical encounters in village-level health stations on one end and county-level hospitals on the other to constitute what Fang terms a "dumbbell-shaped structure."

New modes of syncretism emerged as old lineages of knowledge transmission faced the threat of extinction. Western medicine doctors had to widely adopt elements of Chinese medicine in clinical work and research, incorporating folk remedies into the state *materia medica* and analyzing them using laboratory techniques. At the same time, it became difficult for Chinese medicine doctors to preserve the epistemic independence of pattern differentiation from Western disease categories as "integrative" practices became ascendant (Karchmer 2010, 244). By the end of this period, the Chinese medicine sector suffered comparatively greater losses. A 1978 survey by the Ministry of Health showed that the number of doctors employed in the Chinese medical sector dropped by a third since 1959 while the ranks of Western medicine doctors swelled by almost fourfold over the same period.[10]

With the death of Mao and the higher education entrance exams reinstated in 1977, one of the first events to augur the transformations to come, integrated medicine went through yet another round of state-led mutations. Ministry of Health policies in 1979 and 1980 invoked "integrated Chinese and Western medicine" as one of the three central pillars of health care, in tandem with Chinese medicine and Western medicine (Scheid 2002, 81). But a sub-discipline of Chinese medicine by the same name was also placed under the jurisdiction of the State Administration of Chinese Medicine and Pharmacology, newly installed as a branch of the Ministry of Health in 1986.

At University Hospital, I interviewed ten students doing their residency who selected integrated medicine as their undergraduate specialty. Two stated that they were unaware of the professional differences between Chinese and Western medicine before selecting integrated

[10] From 1959-1977, the number of people employed in the Chinese medical sector declined from 361,000 to 240,000, whereas in Western medicine the number went up from 234,000 to 738,000 (Scheid 2002, 78).

medicine because they thought they might have access to a greater variety of future career paths. Upon graduation, they found that their integrated medicine license remained under the jurisdiction of Chinese medicine, placing restrictions on employment in Western medicine hospitals. Yet, as long as they're willing to practice in less desirable parts of the state health care system, such as in primary care or in a rural part of the country, they can find employment in almost any department, including in one graduate's case, the intensive care unit of a township hospital.

Over a century, disparate historical milieux have conferred upon "integrated medicine" a complex matrix of meanings. It encompasses pharmacological research that liberated the antimalarial artemisinin from herbal *qinghao* (Tu 2016) and the acquisition of MRI scanners at Chinese medicine hospitals. It has served as a model for the institutionalization of traditional birth attendants in Tanzania (Langwick 2011, 58-86) and applies to the piecemeal incorporation of traditional Chinese medicine into Euro-American health systems as reimbursable clinical service (Zhan 2011, 45-50; Scheid and MacPherson 2012). As a preliminary schematic, Volker Scheid breaks down the varied meanings of integrated medicine within China into four categories (Scheid 2002, 83-84):

(1) All of Chinese medicine: From the convergence school to contemporary state-orchestrated plurality, Chinese medicine has been indelibly altered by its "encounter with the state" (Lei 2014). The main sponsor of Chinese medicine is the Chinese state, which brought it into the fold of modern health care institutions including hospitals and professional schools and push for its cultural exportation abroad.

(2) A new form of medicine: State policy in 1950 pointed in the direction of creating a new medicine based on the template of Western medicine but suited to the needs of the Chinese

people. If no longer utopian in ethos in the post-Mao period, flighty hopes for a brand new kind of medicine continue to allure contemporary exponents of Chinese medicine.[11]

(3) Ongoing combinations of Chinese and Western medicines: As much as Chinese medicine doctors read radiographic scans and prescribe antibiotics, Western medicine doctors also prescribe a wide variety of patent Chinese medicines. In fact, it was recently reported that doctors in Western medicine departments prescribe the majority of patent Chinese medicines used in China for various ailments ranging from the common cold to neutropenia from chemotherapy (Wang 2012).

(4) A sub-field within Chinese medicine: Perhaps the most straightforward way to understand integrated medicine after 1980s is its working administrative definition under the state — integrated medicine is a subfield of Chinese medicine governed by the State Administration of Chinese Medicine and Pharmacology.

While there are significant overlaps between these definitions, Scheid tends to prefer the final and least controversial one. But as an exercise in listing historical possibilities, the list is incomplete. For if (2) and (3) are plausible, then is not also "all of Western medicine in China" which has transformed through its encounter with Chinese medicine? As Scheid later wrote with Lei, "Integrated Chinese and Western medicine —so powerfully promoted during the cultural revolution — emerged as a potent third force within China's health care system that continuously threatens to disrupt the stability of its parent" (Scheid and Lei 2014, 259). Any restrictive definition of integration, given its historical variations, amounts to assuming that its parents are

[11] Scheid (2014) explores this impulse in the commingling of Chinese medicine pattern differentiation and systems biology toward a theory general enough to encompass the embodied knowledge of Chinese medicine and the experimental facts of Western medicine.

stable to begin with. Yet, where "Chinese" and "Western" are pervasive markers of distinction, doing away with the terms altogether would obviously be inadequate.

Rather than accept any single working definition of integration, I treat it as an ongoing practice with analogies to the process of literary translation. Lydia Liu, a scholar of modern Chinese literature, grappled with the problem of how Chinese intellectuals in the first half of the twentieth century, anxious to reform their literary forms, were able to talk about modernity in the Chinese language in the first place. Their discourse was shaped by introducing, legitimating and reinforcing "tropes of equivalence" between Chinese words and terms borrowed from Indo-European and Japanese languages, as one might find at work each time a bilingual dictionary is referenced. If Chinese is thought of as a "host" language, then the semantics and styles of modern vernacular Chinese are filled with invented forms for English, German, Russian and Japanese "guests" to take up residence in this new environment. The accurate reproduction of meaning in its original linguistic context is rarely, if ever, achieved. This is key for understanding modern Chinese as what Liu calls "translated modernity," in which new meanings emerge in circulation to confound any clear epistemological divide between the indigenously Chinese and the exogenously Western (Liu 1995, 1-44). Analogies between translation as "translingual practice" and integration as, for lack of a better term, "transmedical practice" are legion.

If a literary scholar finds translingual practice at work in the circulation of neologisms and the use of free indirect style in Chinese novels, I enter putatively "Chinese," "Western" and "integrated" regions of contemporary Chinese health care to observe how medical terms and techniques are deployed in the treatment of putatively equivalent medical conditions in order to describe the transmedical practices of integration. I thus provisionally define integrated medicine

as an ongoing process of seeking local and temporary resolutions to clinical problems in a pluralistic health care environment, avoiding the twin traps of exaggerated coherence or blindness to its ubiquity. My aim is not to produce a comprehensive catalogue of integration, but to stage integration as a response to old and new problems. Perhaps no problem confronting Chinese health care today is on the order of complexity as cancer.

Cancer Treatment

Cancer precedes, interrupts and exceeds this ethnography. While I was trying to design an ethnographic project based in a general hospital as a path to discover emergent configurations of integrated medicine, I could not look away from cancer and the problem spaces it opened up. Perhaps I had cancer "on my mind" ever since my grandparents decided against chemotherapy and radiation for my grandfather after he had a cancerous kidney surgically removed, turning instead to the daily practice of *taijiquan* and ingesting Chinese herbal medicines. (My grandfather passed away thirty years later from a heart condition.) The sway that personal biography has on ethnographic design, while undeniable, was perhaps a small nudge in the direction of a prominent landmark at the heart of University Hospital: its expanding cancer ward. Between 2011-2017, it added more than a hundred beds to an already sizable three hundred, becoming the largest department on campus.

The growing number of patients with cancer across China is in part the consequence of a remarkable health transition over the past seventy years. At the time PRC's founding in 1949, life expectancy was 35 years; this went up to 65 by 1980, an achievement widely celebrated as

the most sustained improvement in the global history of public health.[12] Increase in life expectancy was aided by the communist state's early focus on improving sanitation and eradicating communicable diseases through mandatory vaccination of newborns, ensuring the supply of clean water, and promoting health education. After the spike in deaths during the great famine of 1959-1961, mortality rate saw a steep decline in the mid-1960s leading to rapid rise again and then plateauing in the post-1980 reform era.[13] With fewer children entering younger age cohorts starting in the late-1970s, only in part due to state-sanctioned population birth control policies, demographic patterns tipped toward the elderly (Chen and Chen 2014, 24-28). Disease patterns also shifted toward a preponderance of non-communicable chronic diseases — heart disease, stroke and cancer. The notion of "health transitions" captures both demographic shifts in the population age composition and epidemiological shifts from communicable to noncommunicable diseases with cancer as the leading cause of death across many parts of the country (Andrews and Bullock 2014).

But health transitions in China do not easily reduce to the global trend of an aging population in tandem with economic development that might compel one to reach the cynical conclusion that as China "catches up" to the West, so does its morbidity and mortality. As Dr. Zhao frequently alluded to, remarkable differences in the trends of cancer incidence and mortality can be discerned between China and the rest of the world. The incidence of cancer standardized by age is increasing, even though overall it is still lower in China (about 200 per population of 100,000) compared to the U.S. (about 300 per 100,000) (Chen et al. 2016, 115,

[12] See Eggleston (2012, 19) and Liu, Hsiao and Eggleston (1999). These efforts were well-recognized the time of implementation by the U.S. public health community (Sidel and Sidel 1974).

[13] See the chart in Chen and Chen (2014, 19) for trends in life expectancy.

119; Goss et al. 2014, 490). But the mortality-to-incidence ratio in China is 0.70, compared with 0.69 in India, 0.63 in Russia, 0.40 in the UK and 0.33 in the U.S.[14] Those diagnosed with cancer in China are twice as likely to die from it than those diagnosed in the United States. There are also profound regional differences, with cancer mortality closer to 75 percent in parts of Southwest China. Anna Lora-Wainwright's ethnography on how villagers in Sichuan cope with cancer shows that it is quite accurately perceived to be almost-always fatal (Lora-Wainwright 2013).

The causes of cancer are multifactorial and complex, but there are a few major factors that contribute to Chinese trends. The high mortality rates can be in part attributed to the prevalence of certain types of cancer for which effective treatments are elusive. The most common cancers among Chinese men are lung, gastric, liver, esophageal and colorectal and among women, lung, breast, gastric, colorectal and liver cancers. The mortality rates for lung, liver, gastric and esophageal cancers have remained high around the world for the past fifty years. Some of these cancers are associated with chronic infectious diseases (hepatitis B and C infections for liver cancer, *Helicobacter pylori* for stomach cancer and HPV for cervical cancer). Julie Livingston's observation regarding the entanglement of infectious diseases with the epidemiology of cancer in southern Africa also applies to China (Livingston 2012). Together, smoking and infectious diseases are thought to account for about 55 percent of all cancer deaths in China (Wang et al. 2012).

[14] See Goss et al. (2014, 490). Data is based on GLOBOCAN 2012 compiled by the IARC (International Association of Cancer Registries). The mortality-to-incidence (M/I) ratio, or the ratio of people who die from cancer after they've been diagnosed, for all cancers remains around 0.65 according to newer data. Survival rates range from 24.9% (M/I of 0.75) in Southwest China to 41.0% (M/I of 0.59) in Central China.

But another reason why cancer mortality is so high in China is that most patients — around 80 percent — are diagnosed at such advanced stages that it is next to impossible to cure. The hospitalization of cancer treatment and the advanced stages of cancer diagnoses are inextricably intertwined with both post-Mao health transitions and upheavals in the state health care infrastructure. As Dr. Zhao lamented, the lack of coordination across state health care institutions in the reform era meant an absence of social and financial resources for regional and national preventive programs. A national breast cancer screening program that attempted to screen 1 million women in 2005 stalled for lack of funding (Fan et al. 2014). But the effects of social upheaval in state health care on cancer epidemiology runs even deeper.

In the early 1980s, with the dissolution of the collective commune organization which financed the rural cooperative medical schemes (RCMS) and the village health stations they supported, the most extensive primary care infrastructure ever implemented in China came under severe strain.[15] Urban residents with labor insurance and state employees with even more generous coverage fared better, barring widespread employment insecurities common in the Reform Era. As the majority of the Chinese population lacked health insurance between 1980-2000, entrenched disparities between urban and rural regions intensified.

The liberalization of state welfare also imposed austerity on state-run hospitals. State budget subsidies capped at around 10 percent of hospital revenue in the 1980s while market pricing was introduced on high-tech diagnostics and drugs to ostensibly stimulate innovation and growth (Liu, Liu and Chen 2000). Large hospitals turned to expanding the volume of patients

[15] Hillier and Shen (1996, 261) note that when the Cooperative Medical Scheme funding the barefoot doctors program been first introduced in the early 1970s it covered nearly 75 per cent of the population in 90 per cent of villages. Coverage fell to around 6 per cent of villages retained by the mid-1980s.

treated and over-prescribing profitable services, growing bigger in the process.[16] The common practice of accepting red pockets outside standard fees notwithstanding, even routine tests and procedures that incur disproportionate out-of-pocket expenses on patients can promulgate the widespread perception that doctors are motivated more by profit than by the socialist ethos of "serving the people" (Zhan 2011). With smaller hospitals and clinics even more fiscally starved over this period, patients seeking medical attention for serious illnesses preferentially go to large urban hospitals at the risk of being drained of their life's savings. Large urban hospitals now deliver more than 90 percent of the nation's outpatient and inpatient services (Yip et al. 2012, 834).

An aging population, the epidemiology of infectious diseases, tobacco use, and the collapse of primary and preventive care are all factors propelling more and more patients toward the inpatient towers of University Hospital. But the centripetal force that cancer seems to exert on patients traversing the health care infrastructure was noticeable from the much smaller Department of Integrated Medicine. Patients exiting the cancer ward often looked to Chinese medicine as the bridge that eased them back into the rhythms of life free from cancer. The Chinese medicine clinicians at University Hospital were thus kept busy by this steady flow of patients into their wards and clinics. They are not alone. Estimates based on one institution in Shanghai suggests that over 80 percent of patients diagnosed with cancer concurrently take Chinese herbal medicines (McQuade et al. 2012). But numbers alone fail to convey the manifold ways in which integrated medicine has shaped and been reshaped through cancer treatment.

[16] See Barber et al. (2013, 6) for a chart showing that income from drugs and services make up about 90 percent of hospital revenue in the 2000s.

Chinese medicine physicians continue to occupy positions of institutional and intellectual rivalry with Western medicine. The integrated discipline of "Chinese medical oncology" that emerged in the 1950s, among many other integrated disciplines, has risen in prestige and presence in the large academic hospitals of Chinese medicine in Beijing, Shanghai and Guangzhou. Many of the current leaders of these departments were selected to attend the "Western medicine doctors study Chinese medicine" classes in the mid-1950s and underwent intensive apprenticeships with renowned senior Chinese medicine physicians. Many of them are able to trace their intellectual lineage to scholar-physicians from the late-imperial period who helped lay the foundation of Chinese medical education under communist rule. They have led the scientization of Chinese medicine through conducting experiments on anti-cancer Chinese medicines on the one hand and constituted a modern body of literature on TCM theories of cancer treatment on the other. Through their writings and students, they exert an outsized influence on the practice of Chinese medical oncology. Beyond this small elite, Chinese (or integrated) medicine departments in general hospitals and oncology departments in Chinese medicine hospitals all over the country continue to treat cancer as a condition overlapping but also distinct from the malignant neoplasms of biomedical research. The drugs and interventions Chinese medicine doctors deploy as well as their theories of carcinogenesis offer genuine alternatives. Chinese patients practiced in sounding out doctors from different institutions and disciplines to corroborate their opinions learn to carefully mingle disparate therapeutic strategies. It is at their insistence, usually, that this infrastructure of integration becomes impossible to

ignore for Western medicine oncologists in China.[17] Their treatises and case records, full of errant courses as well as hard-won successes, delineate the contours of transmedical practice.

In this irreducibly pluralistic context, I use "treatment" (*zhiliao*) as a catch-all term that allows the lines between symptom alleviation, biomedical cure, and ritual healing to blur. Thus, I do not presume that any treatment is autonomously efficacious before it has been deployed in specific situations on actual people. This allows me to follow specific treatment strategies — the drugs and devices used, the language with which they are described and articulated, the theories and etiologies referenced, and the values put into circulation — as actually occurring instances of integration. Doing so perhaps prevents me from conducting a historical survey of Chinese medical oncology or the sociology of integrated medicine in contemporary China. But my approach offers other advantages.

One advantage is that I need not preference any one of the overdetermined notions of "integrated medicine" to study integration from an ecological or, better yet, infrastructural perspective. When "Chinese" and "Western" medicine (or integrated oncology and biomedical oncology in China) are mobilized in tandem, their encounter becomes a prism onto the tensions and possibilities in the integrated and integrative infrastructure of contemporary Chinese health care. What Isabelle Stenger calls "reciprocal capture," a dual process of "identities that coinvent one another each integrat[ing] a reference to the other for their own benefit" (Stengers 2010a: 36) conveys the productivity of such encounters. In the history of physics, Stengers shows, and I crudely summarize, how the formalisms of vector calculus obligated physicists to forsake a phenomenological understanding of reality (complete with time's arrow) to consummate a model

[17] The vast majority of oncologists (more than 90%) also prescribe Chinese medicines, usually in the form of patent medicines or injections (McQuade et al. 2012).

of the atom that retains the conditioned measurability of the classical variables of dynamics (energy, velocity, position, etc.).[18] Committing to the universe of quantum physics is neither an arbitrary choice between equal solutions nor the inevitable replacement of classical mechanics by a sounder model, but depended on what Stengers calls "constraints" that obligate physicists to value certain facts and make facts out of these values. In short, to make fact-value amalgams or "factishes."

Chinese medicine and oncology are surely less esoteric in their formalisms than the specialized fields of theoretical physics. A fine compass for parsing the immanent space of physical problems, the production of factishes strikes those familiar with the incessantly combinatorial logics and practices of contemporary Chinese medicine as an understatement. But tracing the integration of specific treatment strategies as processes of reciprocal capture is analytically useful in that it allows me to study claims to efficacy rather than efficacy in-itself. This is not tantamount to saying that "Western" and "Chinese" treatments for cancer are equally efficacious. It means that disparate claims to efficacy (or lack thereof) can be studied as participants' ways of revising or renewing their positions within a space that usually keeps questions of efficacy open, even when claims to the contrary are fiercely defended.

Sharpening one's sensibilities to the openness of efficacy comes at the expense of specificity to scale, a pitfall to which Stengers was also cognizant.[19] Reciprocity does not differentiate between scales of obligation, such as non-medical "obligations" that might more severely constrain what factishes clinicians take up beyond their epistemic commitments.

[18] See Stengers's (2010b) discussion of Niels Bohr's atom in *Cosmopolitics II*.
[19] As Stengers (2010a, 41) put it, "To grasp the specificity of factishes, the concept of reciprocal capture, which applies to subway riders as well as to the manufacturers of factishes, must be qualified so that this equivalence can be broken."

Neoliberal reforms in health care that amounts to an ecological catastrophe for some claims to efficacy and a catalyst for others are better understood from a non-reciprocal perspective. To attend to the broader social and historical field of integration, I need to also attend to the infrastructures of integrated medicine and oncology that non-reciprocally stage efficacy.

Infrastructure: From Inversion to Synthesis

In a technical sense, cancer has to be staged through a set of more or less invasive operations revealing its spatial distribution, histopathology and, increasingly, genotype. In oncology, the staging operation usually classifies cancer into stages from I to IV, corresponding to early and localized to more advanced and, finally, metastatic. When we speak colloquially of "early, middle and late" stages of cancer, it's in recognition of the fact that cancer is something that tends to grow and transform over time. As tempting as it is to assume that the oncological stage assigned to a specific cancer corresponds to a stage of its growth in severity inside one's body, an assumption encouraged by the temporal sense of the word "stage," this correspondence is not assured.

I designate the classification of cancers into stages as staging$_1$ and the stages of cancer as a process that changes through time as stage$_2$. In Chapters 2 and 4, I explore why the correspondence between the technical and colloquial senses of "stage" is a historically constructed premise that does not go unchallenged in Chinese clinics. For now, it suffices to note the difference.

Like any other activity, the technical operations that constitute cancer's stage$_1$ occur in time and space. More specifically, they require large, costly technological implements arranged in a bureaucratic order most often found within modern hospitals. Even when staging$_1$ is

"improvised" in a precariously maintained cancer ward in Botswana, the manner and sequence of operations involved are still recognizably oriented towards determining the spatial distribution and histopathology of malignancies invading the bodies of the afflicted (Livingston 2012, 52-84). In this sense, staging$_1$ appears to be a standardized and reproducible practice, even generalizable to all oncological situations, for which the modern hospital is an indispensable infrastructure.

I use the term "infrastructure" cognizant of recent works in the social sciences exploring the large-scale material systems that enable a ubiquitous part of daily life to carry on undisturbed. Encompassing systems as disparate as transport networks (Harvey and Knox 2015), rice irrigation (Morita 2017), climate modeling (Edwards 2010) and disease classifications (Bowker and Star 2000), the myriad examples of infrastructure's importance to contemporary life hardly needs reiteration. Yet, it might come as a surprise that a central tenet of these analyses of infrastructures is their invisibility. As a key work on the subject by Bowker and Star put by, "good, usable systems disappear almost by definition" (Bowker and Star 2000, 33). When I hear from a friend that she has been diagnosed with "late-stage lung cancer," I need not give much thought to the CT scanner in which she had to lie or the surgical procedure that she underwent to accept that her doctors and she herself know what they are talking about. In this sense, the implements of the modern hospital is infrastructural to more visible notions of cancer's stage (both stage$_1$ and stage$_2$) that circulates in everyday discourse.

For students of infrastructure, its invisibility poses a methodological challenge. Their response to this problem is widely known as "infrastructural inversion" (Bowker and Star 2000; Star and Ruhleder 1996, 113), designating a form of figure/ground reversal (Harvey, Jensen, and Morita 2016, 3). Think of infrastructures as a hierarchy of visibility: smooth, almost

imperceptible surfaces hide increasingly complex and invisible components, while the social relations that make and maintain these components are some of the least visible. Inversion is a strategy of observing infrastructures in the making or during moments of breakdown so their relational underpinnings rise to the fore. The effect is a "gestalt shift" that makes the taken-for-granted surface of infrastructure into a phenomenon that must be explained (Bowker and Star 2000, 34).

A useful comparison of infrastructure in the moment of inversion can be made with Latour's metaphor of black boxes. Latour's 1987 *Science in Action* begins memorably with a visit to a laboratory at the Institut Pasteur in Paris, where a scientist loads up a picture of the DNA double helix on a computer screen (Latour 1987, 1-18). Both these objects — the DNA molecule and the machine that generates the image — are black boxes insofar as their opaque inner workings are taken-for-granted while the viewer registers that she is looking at the human genome. But move back a few years when the 32-bit mini-computer had yet to be built, or a few decades when the structure of DNA was a matter of vigorous dispute, and black boxes open up to reveal the riotous events that paved the way for the placid visibility of the double helix.

Grounds have to shift for the casual observer to notice the riotous underbelly of infrastructures and scientific black boxes alike. Latour was one pioneer of the method when he went inside laboratories to investigate the messy making of facts *in media res* (Latour and Woolgar 1986). Students of infrastructure usually need not travel as far. Turning on the faucet, waiting for the train, and taking medications from a bottle of pills are all commonplace infrastructural experiences that exemplify a visible foreground operation against a background of pipes and mains, tracks and scheduling diagrams, chemical plants and safety regulations that the users only dimly perceive. Occasionally, but frequently enough for many, taps run dry, the train

doesn't arrive on time, and the drug turns out to be inefficacious or worse, poisonous. Not only social scientist then, but everyday users interfacing with infrastructures are forced to pause and take notice of a "leaky" background.

At this point, the optic analogy between black boxes and infrastructures reaches its limit as events of infrastructural breakdown turn out to be not-so-invisible — or rather, inaccessible. With the example of the steam engine, Latour correlates the "darkness" of a black box to its degree of automatism (Latour 2003, 128-132, 254). A steam engine designed so the contraction of steam causes the piston to fall, thus opening the valve to release more steam, is darker than one that continuously requires human assistance to replenish steam. Greater automatism impedes human scrutiny. What might be true for the technological black box of the steam engine makes little sense over infrastructural scales.

Take Bowker's example of the International Classification of Diseases (ICD): a massive list created in 1891 that requires a multi-national effort organized by the World Health Organization since 1948 to maintain and update so governments, administrators, insurance agencies, and epidemiologists can keep track of pertinent health and disease statistics. No matter how many times the ICD is updated, work practices will not change automatically. Local authorities adopt the new version with different degrees of conformity, altering it within broad limits to suit their purposes (Bowker and Star 2000, 53-106). As I explore in Chapter 2, similar processes of alteration and accommodation arise around the standard classifications of tumor staging used all over the world.

If black boxes achieve invisibility on the basis of increased automatism, infrastructures are provisionally unified through standardized classifications. Translocal standards and local work practices interweave such that how one determines the other is never automatic but

generates tension that engender new practices and, in turn, new standards. Rather than reenacting the construction of black boxes, inverting an infrastructure brings out this ongoing tension. As Bowker and Start eloquently put, what appears to be the smoothly operating surface of infrastructures actually need ongoing upkeep by some while remaining barriers of entry for others (Bowker and Star 2000, 34).

Rather than visibility and opacity, the more salient feature of infrastructures is their multi-layered texture. As standards change over time, local practices resist and accommodate, producing friction. Moving through multiple layers of practices and standards involves a textured experience both for ethnographers and their interlocutors. Infrastructures do not comprise mechanisms that automatically reproduce a specific function, but modes of work that mesh with disparate contexts across variable spatiotemporal scales, or what Thomas Hughes calls "momentum." In Hughes' example of the electric grid, this large-scale infrastructure par excellence does not change without disrupting a vast array of assembled components, down to household appliances. Those disrupted components then appear outdated, bringing to relief the inertia of the system. Infrastructure are thus never invisible in a generally accepted fashion, rather, the visibility of infrastructures is differential and relational.

Infrastructures are then better thought of as textured environments from which new objects, norms, standards and mechanisms and emerge, stabilize and evolve over time without ever being reducible to a uniform code or submitted under a singular authority (Star 1999, 382). Because of their depth and pervasiveness, studying infrastructure is no less than to ask fundamental questions of being. As Bowker more recently declared, "infrastructure is ontology," ambitiously proposing that what counts as social entities do so by virtue of "taking up niches available in our infrastructural environment" (Bowker 2015).

Annemarie Mol's practice-centered approach to studying diseases represents one extreme for studying infrastructure as ontology. In *The Body Multiple*, Mol proposes a gestalt shift from taken-for-granted objects to the practices that constitute them. In a move reminiscent of Latourian laboratory ethnography, nothing is left inside black boxes. Episodic encounters within a Dutch university hospital that discern, diagnose, manage, explain – in short, enact – the disease atherosclerosis are magnified and carefully juxtaposed. In what could be described as a maximalist ecology of practices, the hospital environment itself emerges full of dramatic potential — an assemblage of "stage props" which "are as important as the people, because, after all, they set the stage" (Mol 2002, 32). Beyond the standards of staging$_1$ that might, extrapolating from Mol, enact cancer as an object of diagnosis and treatment alongside reams of CT scans or tumors embedded in a tangle of vessels, there necessarily coexists a whole host of other standardized or even anti-standard objects and practices through which "cancer" enters into being. Enacting a disease then encompasses both standards and the "work practices" that evolve through and around them (Bowker and Star 2000, 233-240), articulating and disarticulating putatively immutable categories in a mutable world. Let's call the sum total of these standard, non-standard and anti-standard practices of enactment "staging$_3$."

Staging$_3$ encompasses staging$_1$ but inverts the analytical lens to look at these same practices as constitutive of the objects taken-for-granted (read: infrastructural) rather than simply being premised on them. It forefronts the practical variations of staging$_1$ as constitutive of rather than epiphenomenal to a specific infrastructural environment. If staging$_1$ depends on standardized infrastructures to classify its objects (e.g. tumors), staging$_3$ reveals that this infrastructural environment requires constant ad-hoc maintenance with frequent inversions that offer glimpses into a messy understory of social relations. More theatrical than technical,

staging$_3$ flows from local norms and systems of belief, temporary alliances and unintended trajectories. Staging$_3$ maintains focus on the standardized object as often as the contingencies of age, aspiration, class, gender, diet, desire and so on are brought to the fore.

However, a singular focus on staging$_3$ or enactment in Mol's terms reduces infrastructure into a context constantly made and remade, but rarely pre-made. Even as objects and implements inside the hospital become important "stage props" for episodic enactments, the "Dutch university hospital" ironically falls into a generic clinical background that is itself emptied of history — of its own "stage" (in yet a fourth sense of the term).[20] Taking seriously Massey's insights about "place" as the localization of history, centering ontogeny on enactment risks depleting objects of their history by situating them outside of the specificities of their place (Massey 1995). Where a temporal sequence might emerge in Mol's later works on diabetes, it is reduced to "logics" suspended above interactional episodes.[21]

[20] The term infrastructure does not actually appear in *The Body Multiple*, but evident in how Mol prefers to discuss the environment of the hospital explicitly, leaving no "stage prop" unturned, as it were, is precisely my point: she leaves no room for noticing the depth or momentum of infrastructures.

[21] In an extended footnote entitled "No Space/Time Available!" Mol announces that *The Body Multiple* will not discuss the history of disease, discourse and subjectivity, flattening out the changes she observes in order to lay out a spatial matrix (Mol 2002, 25-26). But if Mol describes a non-Euclidean anatomy beyond the volumetric body naturalized since the European Enlightenment (Mol 2002, 119-121), she appears to declare her project as nonetheless a product of that spatialization (Foucault 2003 [1976], 3). In the *Logic of Care* (2008), which engages with enactments of diabetes, Mol seems to take the other extreme, in which history and temporality are abstracted as dueling "logics" suspended above their places of enactment. A logic of care assumes that time is non-linear and intermingles facts and values whereas a logic of cure assumes that linear time of treatment can reproduce the formal precedence of fact to value (2008, 54-56). But *The Body Multiple* and *Logic of Care* seem to flow from the same source of Western metaphysics which treats space and time as each other's antithesis, as Munn remarked (1992, 94). Her earlier work with de Laet on the Zimbabwe bush pump, which an eye towards a history of post-colonial nation-building materializing through a piece of infrastructural machinery, was in contrast more attentive to the historical dimension of infrastructures (de Laet and Mol 2000).

It is no coincidence that at the other extreme to reducing infrastructure to ontology is to frame infrastructure as both grounding and transcending intersubjective and subject-object relations, placing it under the explanatory ledger of material history, power relations and state formations. This approach can be further subdivided into a Weberian and a Marxian strain, in which infrastructure is located, respectively, within the state as a pillar of its autonomous power or as a bedrock of class struggle over the relations of production and state control. Needless to say, there is a great deal of overlap between the two strains in the works of successive thinkers, including recent ethnographic accounts of infrastructure.

A recent collection of essays on the politics of infrastructure attends to the implications of infrastructure vis-à-vis the promise of the modern state and its highly visible failures (Anand, Gupta, and Appel 2018). While the editors distance themselves from Althusser's concept of infrastructure that implied determination "in the last instance" within the metaphoric "edifice" of society (Anand, Gupta, and Appel 2018, 5-10), they retain an attentiveness to the material forms of global political economy. Of course, these material forms extend far beyond the industrial relations of production classically correlated with the Marxian economic base, entailing for instance the distant watersheds in the Panamanian rainforest that feeds into the Panama Canal through which over half the annual cargo that arrives in the United States has to pass (Anand, Gupta, and Appel 2018, 8).

Beyond enabling the spatiotemporal rhythms of capital accumulation, infrastructures also hold together social relations and collective affect in a visual mode of representation. Under state mandate, the "poetics" of infrastructure convey representations of the state quite apart from any standardized technical or functional property (Larkin 2013). The ritual unveiling of a new road or a bridge is the stuff of pageantry. Far from being invisible, infrastructures in the poetic mode

embody an almost aggressive visibility, demanding to be taken "as if" they represent functions that they might exactly fail at, as in the example of sewage pipes built and unveiled without actually being connected to people's homes (Larkin 2013, 335). As form and function clash, a constitutive tension emerge and the smooth surface of infrastructure gives way to a site of contestation over representation and reality.

To fully appreciate infrastructure as sites of contestation, Weber's definition of the state as a territorially centralized entity with an administrative crust that holds monopoly over the use of legitimate force is an obligatory point of reference (Weber 1958, 79). A notion of infrastructure influenced by Weber accentuates the relatively autonomous role of the state in organizing the logistics of everyday life in contrast to the Marxian concept of the economic base. Particularly salient to the development of the modern state is what Mann, after Weber, calls the state's infrastructural power (Mann 1984).

Despite the weakening of the state's despotic powers (e.g. the monarch's ability to credibly declare, "off with your heads") under modern liberal states, the state's grip over everyday life through its infrastructural projects, from public education to criminal justice, have in contrast tightened. Interestingly, once a useful infrastructure is built, retaining power over it is not simply a matter of maintaining the services and utilities conferred, which could after all be placed under any governing body, state or civilian. Rather, certain infrastructures generates a centralized place of administration to the effect of the increased territorialization of everyday life (Mann 1986, 201-10). The extension of state-run hospitals and clinics into the hinterlands or the (however-halting) statewide cancer screening projects can both be understood as efforts to assert the territorial extension and boundedness of the state. In contrast to actors in civil society, modern states are usually better situated to assert this territorial boundedness. Crucially, the

infrastructural power of the state is not fixed, but oscillates between phases of centralized territorialization and decentralized fragmentation. If social utility allowed the state to initially expand its infrastructural power, the territorialization of said power could also create an arena of struggle as said utilities break down.

Infrastructural poetics here can be reframed in terms of a struggle over how to bound the logistics of everyday life — the "stage" of infrastructural power. Stage in this fourth sense is meant as an arena within which power relations are asserted, negotiated, circumscribed and contested. While enactments of (anti)standards ($stage_1$ and $stage_3$) would not be possible without the infrastructural power of the state to attain a certain territorial reach — the laying down of a $stage_4$ — this arena can persist in excess of the state. In its active extension, $staging_1$ in particular constitutes a proactive movement of infrastructural power creating logistical consistency in circumscribing its domains. But modes of $staging_3$ in various poetic registers can also expose vulnerabilities and betrayals, especially through inversion in moments of infrastructural fragility. In these moments, infrastructure appears to be a passive arena open to occupation and contestation. Of course, this means that the temporal dimension of state power is important to keep in mind when synthesizing the effects of $staging_{1/3}$. Whether we expect infrastructure to be invisibly active ($stage_1$) or visibly active ($stage_3$) depends on the historical "stage" of state-building. The temporal dimension or $stage_2$ returns to situate infrastructural development as a historical $stage_4$ of enactment. Of course, this temporal dimension emphasized in the $stage_2$ of a process and the spatial dimension brought out by the $stage_4$ of enactment are entwined in practice. Their conceptual pairing underscores the chronotopic composition of infrastructures folding over disparate moments of enactment ($staging_{1/3}$) (Anand, Gupta, and Appel 2018, 17).

Having gone through the four senses of stage/staging, we can now say that they represent the spatiotemporal aspects of infrastructure as a dynamic matrix of place, process and event. In English, their homophonous coincidence is a useful mnemonic for their practical inseparability, even if their conceptual distinction is muddled. The opposite happens to be the case in Chinese, where lexical difference indexes conceptual distinction.

In Chinese, the technical procedure of staging$_1$ is *fenqi* 分期. A verb composed of another verb, *fen*, to divide, and the noun, *qi*, which means period or date, *fenqi* can also be rendered "to periodize." In semantic construction, it is similar to another term quite foundational to infrastructure-building — *fenlei* or "to classify." To subject a tumor to *fenqi* is to enact a periodizing operation that classifies an object as an object in time without the baggage of implying coincidence between the period assigned and an underlying duration that "staging" has in English. To refer to the stage$_2$ of cancer as a noun, one uses the term *jieduan* and not *fenqi*.[22] A sense of discontinuity also inheres in the term *jieduan* 阶段, in which each character roughly means tier (*jie*) and section (*duan*), that more idiomatically refers to a part within a whole or a stage$_2$ within a process.[23]

To stage$_3$ an event, such as a new performance of *A Midsummer Night's Dream*, is *shangyan* 上演 in Chinese. *Shangyan* could also be translated as "to enact." Stage$_4$ as a noun in the sense of a place or platform where one expects an event or a performance to occur is *wutai*

[22] To refer to the early, middle, or late stages$_2$ of cancer, however, one uses the term *zaoqi* (early stage), *zhongqi* (middle stage) and *wanqi* (late stage), with *-qi* appearing here as a suffix. In its semantic usage, *jieduan* appears more abstract, standing for a segment of time or duration and not an easily categorizable object.

[23] The explicit sense of temporal progression conveyed by *jieduan* but absent in *fenqi* might have confused the writers of the Chinese language patient education webpage for the preeminent Dana-Farber Cancer Institute (2019), which translates staging as *jieduan panding* — "*jieduan* determination" — rather than *fenqi*. (Or, perhaps they wished to retain consistency between the "stage of cancer" and "staging cancer" in English.)

舞台. The distinction here serves as a reminder that actors almost always rise to the occasion on a stage$_4$ assembled at another time by other entities. A staging$_3$ circumscribed in place and time is impossible without the historical production of its stage$_4$.

In this thesis, I strive to keep these four terms — *fenqi* (staging$_1$), *jieduan* (stage$_2$), *shangyan* (staging$_3$) and *wutai* (stage$_4$) — conceptually distinct but methodologically and practically intertwined. Their conceptual distinction highlights the relational differences that make up the differential visibility of infrastructural elements. It is particularly useful for keeping in view an infrastructure of integrated medicine that holds together numerous seemingly incompatible objects and projects. The methodological entwinement of the four terms, on the other hand, significantly complicates "inversion" as a mode of interrogating infrastructures. Instead, I posit that the only way to understand the spatiotemporal complexity of infrastructure is to juxtapose both what it is and what it becomes. If inversion remains about a three-dimensional axis of surface and depth, the fourfold stage/staging of infrastructure is understood as different phases of infrastructural growth and decay that actively assembles its three-dimensionality. More useful than inversion for holding together the distinct-yet-intertwined features of stage/staging is the idea of synthesis proposed by Volker Scheid.

A key argument advanced in Volker Scheid's *Chinese Medicine in Contemporary China* is that the intrinsic pluralism in the historical unfolding and ongoing practice of "traditional" medicine in "modern" China is best told through the lens of infrastructural synthesis (Scheid 2002). Instead of an edifice with more or less stable levels, Scheid imagines infrastructure as both the context and conduits through which differences are conveyed. Infrastructures then encompass the roads, pipes, corridors, rooms but also the social and linguistic differences inherent in pluralistic cultures. Infrastructure in this sense is more "differential medium" (in the

language of deconstruction) than standardized systems. Scheid elaborated on the infrastructural character of synthesis, quoting the Derridean philosopher Rodolphe Gasché, as "complicity and complication that maintain together an undetermined number of possibilities, which need not necessarily be in a relation of antithetical contrast with one another" (Gasché 1986, 152 cited in Scheid 2002, 55). Synthesis pertains to a multiplicity of places and times as well as events and processes in their mutual mediation. Going on to explain that infrastructural synthesis gives heterogeneous, even "oppositional" concepts a maximally economic organization, Gasché compares infrastructural synthesis to "scenes, stagings, and synopses…to the extent that they do not eliminate difference, spatiality, or arrangement to the benefit of homogenous unity" (Gasché 1986, 152) analogous, one might say, to stage/staging in all four senses of the term.

Beyond the soils of literary criticism, infrastructural synthesis in Scheid's ethnographic vision is deeply sociological.[24] Scheid's ethnography regularly moves between institutional history or infrastructures in the macrological sense and microlevel clinical encounters, discerning in the process the dynamic interrelation between the stage$_{2/4}$ and various stagings$_{1/3}$. Stage/staging as infrastructural synthesis is then no longer reducible to enactment in the active present presumed in works such as *The Body Multiple*. Rather, contemporary enactments are always presented as just one synthetic possibility. Seeing synthesis as an evolving bundle of practices, or the dynamic co-determination of practice and practices, Scheid notices where the emergence of one object/subject implicates the sequestration or disappearance of others. Whether in a contemporary ethnographic encounter of transmitting an acupuncture technique or a seminal

[24] Scheid (2002, 56n84) makes the connection between infrastructure and Bourdieu's concept of the bureaucratic field. Bourdieu's theorization of the interchangeability between species of capital without encountering lasting contradiction thanks to the bureaucratic field of the state makes for useful comparison (Bourdieu, Wacquant and Farage 1994).

moment in history of collating and composing the first modern textbook of Chinese medicine, Scheid painstakingly details the positions and genealogies of the actors in the room and not. Missed opportunities from the past as well as imaginaries and promises for the future are infrastructural to any episodic encounter (Scheid 2002, 33-44).

The maintenance of this degree of spatiotemporal plurality becomes important in evaluating and experiencing "efficacy" in the integrated treatment of cancer. As standards and practices forged in distant places and times regularly converge, an infrastructure that circumscribes a degree of plurality is hardly ever the invisible background. Yet, how exactly to think about the differentiating medium of infrastructure in relation to the desired effects, namely efficacy in treatment, is a complicated question.

To this day, the infrastructural quality of efficacy can be appreciated by way of understanding how efficacy has been formatted by the case record or *yi'an.* Judith Farquhar described case records in modern Chinese medicine as the "central condensations of the knowledge, agenda, and powers of doctors," serving as guides for Chinese medicine clinicians in interpreting an ancient corpus of texts (Farquhar 1992, 63). By late-17th century, the case record developed into a genre of notating medical knowledge that shored up the intellectual legitimacy of the experience of individual physicians. Scheid contrasted it to the anthology (*zongji*), which compiled sections of doctrinal texts with commentaries for the sake of propagating orthodox medical teachings (Scheid 2007, 47). Preeminent among these texts are the *Inner Canon of the Yellow Emperor* (*Huangdi neijing*) and Zhang Zhongjin's *Treatise on Cold Damage* (*Shanghan lun*), composed before and during the Han Dynasty, respectively. Millenia later, official support for these orthodox texts rarely flagged. Hanson showed through three encyclopedic projects sponsored by the Qing court between 1728 and 1782 that the scholar-bureaucrats charged with

compiling the medical texts basically upheld the Han and pre-Han canons (Hanson 2012, 121-124). This was in part because they practiced *kaozheng* or evidential scholarship, which gained influence in the late-Ming and Qing periods as a method of recovering the essence of antiquarian texts thought to have been adulterated from the Song Dynasty onward. The impact of this style of scholarship is still felt in China today, where medical philologists continue to shape the interpretation of ancient texts, which are honored and cited, however selectively, in standardized medical textbooks.

But contemporaneous with the rise of evidential scholarship was the proliferation of local "currents" of practice centered around family lineages and individual virtuosity. A notable example is the reputation that accrued around Ye Tianshi (1667-1746), a physician from Suzhou known during his lifetime for the case-based flexibility and near magical efficacy of his treatments (Scheid 2007, 50-52). Having left no treatise of his own, his case records were nevertheless collected two decades later, by self-professed followers of the "Ye current" of practice, who contributed commentaries on the case records to form the *Medical Case Records as a Compass for Clinical Practice* (*Linzheng zhinan yi'an*). This collection became one of the most popular medical texts in the Qing Dynasty. Even if Ye Tianshi never went so far as to diminish the importance of the canons, he was appreciated for building upon a southern tradition of medicine marked by its emphasis on local pathogenic forces that entered through the nose and mouth to produce seasonal febrile illnesses (Hanson 2012, 115-117). This "warm pathogen" or *wenbing* school of medicine began in the late-Song period, with revisionist practitioners who forged local currents, and remains vigorous until today. Even as the *kaozheng* scholars trace the corruption of ancient learning to the same late-Song period, against which their work is cut out, they also became inadvertent pollinators of their rivals' works. A critical annotation of Ye

Tianshi's case records published by Xu Dachun (1693-1771), a respected *kaozheng* scholar, only lent weight to Ye's reputation (Hanson 2012, 117; Scheid 2007, 52). By the third and most ambitious encyclopedic anthology project under Emperor Qianlong, the *Annotated Catalogue of the Complete Collection in Four Treasuries* (*Siku quanshu zongmu tiyao*), the medical section reserved space to case records representative of local trends, including Ye's collection (Hanson 2012: 124).

As the principles and prescriptions passed down from the canonical texts are embodied in textbooks, pamphlets and even the packaging on drugs, they form a common tongue for practitioners and consumers of Chinese medicine even today. We could even say that they form an important part of the infrastructure of medicine in China, especially given that it is precisely the breadth and depth of the canons that make individual virtuosity stand out. Even as the *Inner Canon* and the *Treatise on Cold Damage* continue to make up the backbone of Chinese medical education, students learn to practice through association with local masters and imitating case records. Hereditary affiliation with a medical family or association with a respected current of medical learning still form an important mode of distinction that attract clients. The relationship between textual orthodoxy and case-based efficacy thus continues to be a highly productive one.

Efficacy in integrated cancer treatment is almost always pursued with a degree of casuitry: "it hasn't always worked, and in fact most of the time doesn't, but this time it just might." This mode of seeking and experiencing efficacy is so universal for patients with late-stage cancer that it brings with it all kinds of corollary, case-based adjustments with respect to the simultaneously enabling and impeding infrastructure. Each encounter with a cancer diagnosis is staged1/3 as a highly individualized one. As an oncologist at University Hospital told me, "every patient begins as a textbook case, but never ends as one." An ontological politics around

the question of "what is cancer" then only scratches the surface of its infrastructural phenomenology. The productive relation between the affordances of an infrastructure and case-based efficacy takes the form of "what if" rather than "what is."

In short, then, efficacy in cancer treatment entails the experience of an infrastructure working, often against all odds. Even if a part of the infrastructure must be taken for granted, its momentum is regularly channeled through case-based adjustments and experimentation, through the reframing of goals and the redefining of destinations. The stage2/4 of cancer has to be repeatedly staged1/3. Case-based thinking becomes a way of connecting the dots of localized stagings into a germinal configuration of infrastructure – modified, inverted or subverted. Whether or not they crystallize into new elements of infrastructure, they do suggest a way forward.

Efficacy, Case by Case: A Note on Method

Taking inspiration from Walter Benjamin, who liberated the translator from fidelity to the original (Benjamin 2000 [1923], 21), I treat what I have called transmedical practice as a mode of translation more than a method of authentic reproduction. Assembling the multiple translations of stage/staging opens up the object of this ethnography: cancer treatment with integrated medicine. But as the meaning of staging even in the technical sense of cancer staging becomes unstable through translation, the object of ethnography also resists any simple delimitation. What I aspire to write, then, is not an authoritative account of integrated medicine as it exists in the 2010s or a disciplinary history of Chinese oncology. Instead, this thesis draws out eventful intersections of integrated medicine and cancer treatment to avoid the trappings of the standard molds of "Chinese" and "Western" as they apply to medicine in China. Taking

cancer treatment as a productive constraint in Stengers' sense, staging efficacy calls for a mode of writing that reciprocates this task.

As a dynamic literary form in the Chinese medical traditions, I think the case record is particularly suited to this task. This mode of literature-in-translation was moreover inscribed in how I inhabited the "field." In what follows, I briefly describe how and where I encountered the people and materials comprising the cases in each chapter, how the events described were situated vis-a-vis my position as an ethnographer and why efficacy in cancer treatment can be staged as a sequence of cases.

The fieldwork on which this dissertation is based was conducted over seventeen months during 2011-2017, with the longest stretch being twelve months from 2016-2017. I spent a total of fourteen months at "University Hospital" in Wuhan, split evenly between the Integrated Medicine Department and the Oncology Department. For three months, I also visited the outpatient clinic and inpatient ward of the Department of Chinese Medical Oncology at the Hubei Provincial Hospital of Traditional Chinese Medicine ("Provincial Hospital"). Provincial Hospital is also a large tertiary hospital and serves as the main teaching hospital of the Hubei University of Chinese Medicine training a large portion of Chinese medicine doctors in Hubei and around the country. Furthermore, I spent many days each month during my time in Wuhan at a private Chinese medicine clinic, several weeks each at two community health centers established in 2008 as part of the central government's push for greater primary care access, and found myself going to a handful of home visits with the palliative care team based at University Hospital. The rest of my time — about three months — was divided between Dongfang Hospital affiliated with the Beijing University of Chinese Medicine, Guang'anmen Hospital affiliated

with the Chinese Academy of Chinese Medical Sciences, and the First Affiliated Hospital of the Guangzhou University of Chinese Medicine.

From the beginning, I was able to "pass off" as a Chinese medical student. Linguistic ability, attire, appearance and demeanor probably all casted me in this role. I attended two years of elementary school in Hubei's neighboring province, Hunan, before emigrating to Canada with my parents.[25] While the mandarin I speak is closer to the northern tones of standard Chinese, the Wuhan dialect became intelligible to me after a few months. I was not a student of medicine the first time I went to University Hospital in 2011, but by hospital regulation I had to don a white coat to appear with physicians on the ward. By the time I returned to Wuhan in 2016, I had finished the third year of medical school, completing the required clinical rotations in internal medicine, surgery, pediatrics and gynecology in Chicago. In both China and the U.S., I had become accustomed to declaring my identity through hospital attire.

Assessing the challenges of doing ethnography in a hospital, Sjaak van der Geest and Kaja Finkler laid out three roles fieldworkers typically occupy (van der Geest and Finkler 2004). They can put on a white coat and become one of the hospital staff; they can become patients in illness real or feigned; they can act as visitors to other patients. More so than most anthropologists, I fell squarely into the first camp. This came with conveniences as well as constraints. For one, if I didn't have these exterior signs of institutional affiliation, it would have been too easy to mistake me as a pharmaceutical representative or a private contractor (as happened to me once even with a white coat on). Hospitalized patients anywhere are not often in

[25] Hunan and Hubei once belonged to the State of Chu over two thousand years ago. Today, they share the Dongting Lake along their respective northern and southern border. Located in the mountainous heartland of China, well-irrigated by the Yangtze River and its many tributaries, the two provinces are home to a dizzying array of dialects.

a situation that welcomes solicitation from curious strangers, and in an environment of rampant commercialization in health care, the most cordial encounters in the hospital can be tinged with suspicion.[26] Doctors at University Hospital frequently described their interactions with patients as "walking on thin ice."

In spite of these constraints, there was room for reframing institutionalized encounters. I lived in a guest house on the medical school campus, so I was able to freely visit the inpatient ward throughout the day, sometimes without my white coat on after the staff got to know me. When I wasn't blending into the retinue of white coats during grand rounds, I was allowed to introduce myself to patients individually. I quickly learned how to describe my project in a way that cleared up the look of confusion whenever I introduced myself as an anthropologist conducting fieldwork (*shidi kaocha*). Usually, after I mentioned that I was studying practices of medical integration, patients were quick to open up about their treatment trajectories. Some thought that I was an overseas medical student eager to tap into my heritage and diversify my future clinical practice. The conversations that followed usually unfurled multi-year therapeutic itineraries[27] spanning a range of institutional and everyday settings in which the patient and their family members have strategically woven together an eclectic set of treatments. It quickly became clear to me that I could not stay put in a single department, hospital, city or even region to understand the contours of the cancer treatment process.

In his influential article on multi-sited ethnography, George Marcus reflected on the complexities of a globalizing world far exceeding the localist frames that anthropologists are

[26] For associating with state institutions to engender mistrust is not unusual for anthropologists working in post-socialist health care settings, as Eugene Raikhel (2014, 210) noted regarding his experiences doing fieldwork in post-soviet addiction treatment facilities in St. Petersburg.
[27] I take this term from Brotherton (2012, 35); see Chapter 1.

comfortable assuming. Calling for ethnographers to attend to how their transit intersects with how interlocutors map the global in the local, Marcus wrote, "The most important form of local knowledge in which the multi-sited ethnographer is interested is that which parallels the ethnographer's own interest – in mapping itself" (Marcus 1995, 112). In actual fieldwork design, however, Marcus is rather liberal in the strategies he endorsed, ranging from following things, people, metaphors, conflicts, to "strategically situated single-site ethnography."

The patients I interacted with were highly mobile and no two of their therapeutic itineraries were alike. Wuhan, a city of over ten million in central China, turned out to be a fortuitous location for tracing far-flung trajectories. Historically, it has been a critical transportation hub connecting North and South China across the Yangtze River, becoming the site for the first railroad bridge spanning the river in 1957 and one of the first high speed rail stations in 2009 in the vital passage from Guangdong to Beijing. But compared to the "Tier-1" cities of Beijing, Shanghai, Guangzhou and Shenzhen[28] overrepresented in the ethnographic literatures, Wuhan is further inland and less economically developed. Between a third to a half of patients on the cancer ward at University Hospital have insurance coverage through the New Rural Cooperative Medical System used by Chinese citizens with rural residency. Staying in Wuhan may have enabled me to experience a more typical cross-section of Chinese society, but it also highlighted the mobility of Chinese patients when the nation's most reputable medical centers are often just an affordable train ride away.

In retrospect, the overwhelming sense of having to go everywhere was also because cancer constantly threatens and disrupts its spatiotemporal boundedness. It wasn't just the

[28] Collectively known as Bei-Shang-Guang-Shen, these cities share characteristics of having higher than average living standard and cost and enjoying favorable state policies of economic development.

patients doing the traveling — malignant cells too-often coursed through the body seemingly unimpeded; physicians studying abroad brought back Western standards for tumor staging; new pharmaceuticals enter the Chinese market through licit and illicit routes; the genomic data of Chinese patients becomes the basis for cancer drugs to gain approval by the U.S. Food and Drug Administration. I quickly learned that following no single group of people, metaphors or objects would suffice to capture either cancer treatment or integrated medicine in action. To paraphrase Xiang Biao, as multi-sited ethnography abandon the "invisible hand" assumptions of structural determinism to focus instead on the "visible feet" of actual movement, it remains unclear whose feet (or what) we should follow and how far (Xiang 2013, 283). Facing these ambiguities in studying the movement of Chinese migrant workers, Xiang proposed complementing multiple-sited research designs with multi-scalar analytic strategies. He defines "scale" both epistemologically, as a set of taxonomical tools useful to state bureaucrats, migrant workers and social scientists alike, and ontologically, as the spatial reach of action. Methods of analysis thus becomes linked to the processes that social scientists might wish to capture as movement over different kinds of ranges.

The multi-scalar analytic I converged upon is the case record. [29] If their ascent in popularity is relatively recent, the literary form of the *yi'an* is one of the oldest for transmitting Chinese healing.[30] Today, Chinese medicine clinicians continue to publish case records in edited

[29] Cases form a strange species in the social sciences, between the empirical and theoretical, the general and specific, enumerable tokens of types and categories of analysis (Ragin and Becker 1992, 1-18). Lauren Berlant incisively described the case as "a problem-event that has incited judgment" (2007, 663). I take up the term as a method and analytic cognizant of its resistance to definition and epistemic centrality in Euro-American social sciences.

[30] The oldest case record, that of Chunyu Yi in the *Shiji* or *Records of the Grand Historian*, has itself been the subject of many case studies by historians of Chinese medicine (Cullen 2001; Goldschmidt 2015; Furth, Zeitlin and Hsiung 2007). Bridie Andrews (2014,185-205) shows that

volumes under their own names or those of their institutions. In Appendix 2, I translate a case record from Piao Bingkui, a renowned Chinese medicine oncologist at Guang'anmen Hospital in Beijing. Although atypical in its length, its format preserves the classic narrative form of a sequence of encounters, each necessitating the reanalysis of an illness pattern that bring to the fore the clinician's accumulated experience and practical virtuosity in the face of a wily and ever-changing illness. Unlike the case record in biomedicine, as Farquhar noted, the *yi'an* emphasizes the temporal and historical character of an effective treatment rather than the anomalous manifestation of a disease category (Farquhar 1992, 62). In other words, the case record is a local mapping strategy that contains a multiplicity of sites and scales. The work of constituting a case thus attaches my itinerary with those of patients from whom I have learned the most.

Outline of the Chapters

Each of the following chapters begins by focusing on one or several patients who assert that one or more aspects of their treatments were efficacious. While describing their strategies and therapeutic itineraries in the manner of writing a case record, I foreground the infrastructural conditions of possibility to the specificities of these cases. My interest is not in proclaiming the

during the early 1920s, the Chinese medical case record went through a round of standardization in its encounter with Western medicine. Compared to terser and more stylistically varied historical antecedents twentieth century case records were organized into standard sections, contained detailed ingredients and doses of all of the prescriptions deployed and its appreciable effects on the patient. Its format was a reflection of Chinese medical physicians' reformative impulse to not only shore up the empirical basis of their knowledge but create a coherent framework to conserve and adapt their distinctive practice. A comparison with the case record of Chinese medical oncology in Appendix 2 reveals that it has not remained a static form. Most noticeably, the latter contains numerous references to modern diagnostic aids such as radiographic scans and references to biomedical therapies.

skills of the patient or physician involved or to assert the presence or absence of efficacy. In building a case record from varied assertions and embodiments of efficacy, my aim is to delineate the interplay between stage and staging that materializes efficacy. Synthesis is a mode of understanding how efficacy can materialize through transient enactments within relatively stable, if stably unreliable, infrastructures. It entails inversion in the sense that most patients and clinicians are acutely aware of the unreliability of the clinical infrastructure for producing efficacy and the need for constant improvisation. But synthesis goes beyond inversion, often literally through the very movement of patients across a pluralistic health care environment. A basic goal of this thesis is to paint an impression of this environment or stage$_{4}$ of integration. So I begin and end with cases that pivot around the stage$_{4}$ of efficacy in terms of the shifting place of integration. The middle chapters are devoted to the interplay of standards and practices, stagings$_{1/3}$ of cancer as fixed and fluid entities that in turn depend on its stages$_{2/4}$.

Chapter 1 unfolds from the case of Elder Kang, who has consistently seen the same clinician, Dr. Sun, for sixteen years at the Integrated Medicine Department of University Hospital. I show that the efficacy she seeks from Dr. Sun, while dependent on a highly personalized relationship built upon a long sequence of episodic encounters in the outpatient clinic, consistently returns to the inpatient region of the hospital as a site of enactment. The access to a hospital bed that Dr. Sun makes possible for Elder Kang inverts the typical association between Chinese and Western medicine and their respective sites of action as, namely, the outpatient and inpatient regions of the hospital. Staging efficacy then hinges on the conditional inversion of the privileged sites of Chinese and Western medicine. As we move to the putatively Western medical region of the hospital, namely, the cancer ward, this further motivates a synthetic understanding of the stage$_{4}$ of efficacy in which the hospital bed is more

than a convenient prop. In so doing, I challenge any non-integrationist perspectives on the institutional composition of modern Chinese hospitals.

Chapter 2 stays in the cancer ward of University Hospital to focus on the case of Ruan Linxi, a third generation hereditary Chinese medicine doctor who was diagnosed and treated for a highly aggressive form of lung cancer. The chapter begins with an analysis of staging$_1$ as a set of practices regimented around tumorcentric deixis, or the enactment of cancer as a disease of tumorous growth anchored in anatomical space. By examining the modes of prognostication that tumorcentric staging$_1$ promotes in juxtaposition with non-standard or anti-standard stagings$_3$ of malignant growths, I suggest that efficacy materializes through an expansive understanding of cancer treatment as a process in stages$_2$ that fails to be fully captured by tumorcentric staging$_1$. In the lives of Ruan Linxi and most Chinese patients with cancer, this processual sense of cancer unfolding renders expectations and experiences of efficacy, especially in late-stage disease, highly dependent on the affordances of an integrative infrastructure.

Chapter 3 turns to Ms. Yuan's therapeutic itinerary for her metastatic lung cancer. With the help of her daughter and Dr. Liang, a hereditary Chinese medicine doctor who served as the Director of Oncology at Provincial Hospital, Ms. Yuan ingested gray market molecular therapies sourced from India. Like numerous Chinese patients with late-stage cancer, she engaged in a practice known as blind ingestion (*mangfu*). As Chinese patients experiment with combining old and new therapies for cancer in heterodox ways, I suggest that a synthetic understanding of integrated medicine is critical for appreciating how efficacy is staged$_3$. This chapter further shows that global infrastructures of staging$_1$ cancer and historical infrastructures of staging$_3$ efficacy intersect in producing the grassroots expertise of a highly informed subset of Chinese patients with late-stage cancer.

Chapter 4 returns to examine emergent configurations of the stage$_4$ of efficacy through two intertwined cases. One is that of Ganny Lu, who committed to treating her metastatic colon cancer without recourse to biomedical oncology during her last few years of life. The second is that of her daughter-in-law, Qin Chuan, who resigned from her position as a gynecologist at University Hospital to become a private Chinese medicine practitioner. In both their cases, the combination of cancer and integrated medicine circumscribed different versions of "pure" Chinese medicine that relied minimally on biomedical treatments both inside and outside the state hospital. Their cases illustrate how changing arrangements of state sanction and citizen initiative allow new configurations of integration — proposed over seventy years ago to support the extension of preventive health and hygiene to the masses — to evolve in a nascent health care market for the treatment of chronic diseases.

CHAPTER 1

The Place of Integration in a Chinese Hospital: A Case of Devalued Beds

Introduction: Chinese medicine in the outpatient clinic

Stepping into University Hospital's outpatient lobby at around 8 o'clock in the morning, first time visitors are thrust into a bewildering throng of activities. Lines snake in front of the elevators, in front of the cashier windows, and even in front of the row of breakfast carts near the entrance. There are plenty of signs pointing to dozens of specialty clinics, laboratories, diagnostic exam centers, and pharmacies. But it's up to you to know where you're going.

For 74 year-old Elder Kang (Kang-*lao*), a retired teacher from the nearby school district, navigating the massive hospital consistently began with a visit to the same person over the past sixteen years. In my first month shadowing Dr. Sun Yibing of the Department of Integrated Chinese and Western Medicine, Elder Kang appeared a total of three times: the first two visits planned for an admission that led to her third visit. Her encounters with Dr. Sun complicated a phrase I heard other doctors of integrated medicine repeatedly uttered: "The essence of Chinese medicine is in the outpatient clinic" (*zhongyi de jinghua zai menzhen*). I took it as a cue that there was not much to see in the inpatient ward if I was interested in Chinese medicine. As a piece of fieldwork advice, it seemed rather obvious at first.

I learned early on to expect most senior Chinese medicine doctors (*laozhongyi*) at the Department of Integrated Medicine, University Hospital's de facto Chinese medicine department, to never show up in the inpatient ward. Their preferred site of practice was the outpatient clinic located in a separate building on the edge of campus. Ethnographic literature on Chinese medicine would confirm this impression. Chinese medical practice, as Judith Farquhar classically described, "is a sort of recovery management, periodically reanalyzing the patient's

symptoms and redesigning his therapies." The par excellence site of reanalysis is the outpatient clinic.[1] Anthropologists of Chinese medicine have since detailed the matters and manners that circulate inside the clinic and make it the primary site of encountering Chinese medicine for patients and ethnographers alike.[2] Those who venture into the inpatient side of Chinese medicine have tended to conclude that Chinese medicine's epistemic distinction is seriously threatened by Western medicine in the inpatient arena.[3] In other words, the distinctive efficacy of Chinese medicine found in the outpatient clinic is seldom encountered on the inpatient ward.

It was Elder Kang's sixteen year history with Dr. Sun that made me wonder why the inpatient side of Chinese medicine should be deemed uninteresting by default. There was obvious continuity between her outpatient and inpatient encounters with Dr. Sun. Typical of

[1] See Farquhar (1994b, 220). Note that the outpatient clinic of Guangzhou University of Chinese Medicine (GUCM) was a major field site in Farquhar's ethnography of the clinical encounter in Chinese medicine.

[2] Other ethnographic studies of Chinese medicine in action also focus on the outpatient encounter. Scheid (2002) made much of his fieldwork observations in the outpatient clinics of major hospitals in Beijing as did Zhang Yanhua (2007a; 2007b). The subject of Elizabeth Hsu's (1999) ethnography was different modes of knowledge transmission in Chinese healing. She enrolled as a student at the Yunnan College of TCM in Kunming and observe how knowledge and authority is embodied in the classrooms as well as the clinics of different physicians and healers with and without state affiliation. Zhan's (2009) ethnographic study on the transnational networks of Chinese medical practice was situated in a major TCM hospital, Shuguang Hospital in Shanghai, as well as private practice clinics in Shanghai and San Francisco. As Zhan noted in later works, "Many young practitioners and students doing their clinical rounds at Shuguang Hospital complain that they do not learn anything until they start working under senior practitioners in the clinic" (Zhan 2014, 254). So it might seem only natural for fieldworkers to reproduce this bias.

[3] There are of course important exceptions to the singular slant on outpatient encounters in the anthropological literatures. Karchmer's (2002; 2010) participant fieldwork as a student at the Beijing University of TCM attended to the politics of knowledge on an inpatient nephrology ward at Dongzhimen Hospital in Beijing to argue that Chinese medical knowledge is often made secondary vis-a-vis biomedicine. Shao's (1999, 29-34) ethnography on the inpatient unit of a prefecture-level Chinese medicine hospital in Shashi, Hubei makes an even stronger point of the reification of the practitioner and flattening out of a tradition in its relocation from an hitherto ambulatory setting to the inpatient ward.

outpatient Chinese medicine encounters, Elder Kang's appointments with Dr. Sun began with conversation and pulse palpation, culminating in the prescription of an herbal formula. But in addition, a significant part of what clinicians like Dr. Sun did was helping patients like Elder Kang navigate a complex medical bureaucracy, including regular admissions to the inpatient ward of the Integrated Medicine Department. Elder Kang and her husband, who suffered from a chronic respiratory condition, stayed in Integrated Medicine's inpatient ward for weeks at a time, several times a year. For Elder Kang, Dr. Sun was not just a purveyor of carefully assembled herbal medicine prescriptions, but also a prescriber of mammograms and antibiotics, and, crucially, a guarantor of a hospital bed for a chronically ill spouse.

This chapter argues that the reflexive association of Chinese medicine with the outpatient clinic can be deciphered against the historical background of the rise of Western medicine as predominantly inpatient practice. After 1980, state medicine underwent a slew of market-based reforms that decentralized and privatized hospital financing, driving administrators and physicians to embrace clinical specialties that prioritize the productivity of high-tech treatments through amassing large inpatient volumes. The numerically smaller and more low-tech hospitals and departments of Chinese medicine, however, still prioritize the outpatient mode of encounter as its locus of efficacy. By conferring epistemic priority to outpatient encounters, an epistemic division between Chinese and Western medicine mapped onto a bureaucratic divide between inpatient and outpatient. The relative recency of the historical transformations I'm outlining allows me to comb through the oral histories of patients and clinicians for clues to the lived ramifications of changes in the bureaucratic topography. Specifically, at University Hospital, the rise of the inpatient part of the Department of Oncology serves as a foil to the Integrated Medicine Department.

The value of outpatient clinical encounters, however, does not solely derive from its epistemic import within Chinese medicine, but also for enabling or impeding transit within a larger health care ecosystem. To draw on the felicitous distinction made by Allan Young, the efficacy of a medical treatment or clinical encounter, construed as a healing process that specifies certain therapies, is not to be confused with its productivity, which has to address who is exposed to which illnesses and who has control over prophylactics and cures (Young 1982, 278). Within the hospital narrowly construed, "outpatient" and "inpatient" are spatial signifiers that in part designate who gets to access to what kinds of treatments and where. In other words, the distinction has to do with how the efficacy and productivity of specific treatments are differentially prioritized in different regions of the hospital. With these terms in mind, I extend Allan Young's key insight that while productivity requires a medicine to be efficacious, efficacy does not guarantee productivity.

I argue that oncology's rise in contemporary China has been fueled in part by the efficacy of high-technology treatments, but its productivity has in turn corroded the efficacy of discrete treatments by devaluing the outpatient mode of clinical encounters. Integrated medicine, on the other hand, allows the efficacy of discrete treatments to materialize over the long term. This, I argue, is because integration encompasses an infrastructure for maintaining regional continuity across inpatient and outpatient domains. To make my argument, I look to the case of Elder Kang and Dr. Sun, underscoring the value that Elder Kang places on Dr. Sun's inpatient bed. Her case stages the devaluing of Dr. Sun's bed on the integrated medicine ward as an inversion of the ordinary relation of the outpatient clinic as the site of Chinese medical efficacy. Cognizant of the emplacement of integrated medicine in the contemporary Chinese hospital, my conclusion can

then be summed up as a revision to the advice I initially received: "The value of integrated medicine in the outpatient clinic is mediated through Chinese medicine on the inpatient ward."

The Price of a Bed

At first glance, the institutional geography of University Hospital conforms neatly to a bifurcation between inpatient and outpatient. Inpatient wards (*bingfang*) and outpatient clinics (*menzhen*) are separated in space. The latter is located in a single complex at the edge of campus in which every clinical specialty from integrated medicine to thoracic surgery is allotted a section of office spaces. Some departments take up two rooms; others an entire corridor. Overall, the discrepancy is small in comparison to the various specialties' inpatient wards, which are buried deeper on campus and. Depending on the size of the department, its inpatient ward can take one floor or up to a whole building.

Encounters that traverse different regions of the hospital string together a trajectory that convert mobile seekers of medical advice into stationary consumers of medical treatments. This conversion is critical for the growth of the capitalist bureaucracy that Chinese hospitals have become,[4] a point brought into focus by a conversation between Elder Kang and Dr. Sun. Complaining about the bill from a recent visit to the emergency room after her husband experienced an acute attack of his respiratory illness, Elder Kang asked for advice:

Elder Kang: Our last visit cost over 4000 *yuan* with all the tests he had to do.
Dr. Sun: That's understandable, I would do the same if I was in their [the emergency room doctor's] position. It's not that they overcharged you, it's that my bed is too cheap [*wode chuangwei taipianyi le*].
Elder Kang: Then what should we have done? What should we do in future situations like this?

[4] See Meisner (1999, 474-479) on rise of "bureaucratic capitalism" in the wake of post-Mao market reforms, referring to the vigorous pursuit of profit through price arbitrage and rent-seeking by those occupying strategic positions in the state bureaucracy.

Dr. Sun: I can only promise you that if I have a bed on hand with oxygen available, you can always count on having a bed, I won't mind him saying "bye bye" on my watch or anything like that. But if I don't have a bed or have no oxygen, then there's no way I would admit [Elder Fu].
Elder Kang: Where should we go then?
Dr. Sun: The right place to go would actually be the emergency room.

Dr. Sun goes on to explain that if he was the emergency room doctor with no prior familiarity with Elder Fu, he would have ordered just as many tests. In the rare chance that Elder Fu harbored a tumor beneath his symptoms of a chronic respiratory illness and he naively only ordered a chest X-ray, he would have missed the tumor. If Elder Fu had come to Dr. Sun instead, ongoing relations with him and Elder Kang would have allowed Dr. Sun to confidently base his assessment on a simple chest X-ray.

In claiming that his bed is "too cheap," Dr. Sun is not referring to the unit price of a bed (Liu et al. 2000). Like most other medical commodities available at University Hospital, a bed has a price mandated by the provincial health bureau. As is the norm across public hospitals, the prices of every test, drug and amenity (such as a bed) that the hospital has to offer scroll across LCD monitors in the lobby of each building. According to the provincial government's website, the price of a single bed in a two-person room at a tertiary hospital like University Hospital is 57 RMB or less than 10 USD per day (Guo 2015). A bed at an emergency room is charged at the same rate.[5] While admitted, patient receive daily invoices on which the costs of all of the remedies and amenities her or she utilized over the last twenty-four hours are listed. A subset of these services — around 10 percent on average — includes high technology diagnostics which can be charged at prices that exceed their cost and make a profit for the hospital. This dual-track

[5] This fact alone makes the Chinese hospital a financial institution quite different from American hospitals in which the same aspirin can have several prices depending on third-party payment plans.

pricing system has been in place across Chinese hospitals since 1980 (Liu et al. 2000). However, knowing the itemized prices of every service in the hospital does not always prepare one to estimate the total price of admission.

Elder Kang's complaint about a 4000 yuan bill for her husband's one day of admission was in reference to the cumulative charge of assorted expenses from including the bed, bags of intravenous fluid, imaging studies, down to each cotton swab. The discrepancy between negligible itemized costs and outrageous cumulative costs might be especially jarring for inpatient admissions, when patients have to deposit a few thousand yuan into a hospital account before any treatment can begin and replenish this account throughout their stay whenever it runs low.[6]

Chinese medicine hospitals and departments are usually less efficient at accumulating large fees for each patient admitted. Mei Zhan noted that outpatient clinic visits and inpatient admissions among top-tier Chinese medicine hospitals in Shanghai cost well below the average of similar-tier general (read: Western medicine predominant) hospitals (Zhan 2011, 68). Patients have hence learned to expect Chinese medicine to rely less on an arsenal of expensive technological devices in diagnosing and treating illnesses.

But why did Dr. Sun not complain instead that the bed in the emergency department bed was "too expensive" and actually encouraged Elder Kang to take Elder Fu back if similar situations arise in the future? To the extent that Dr. Sun might have felt that it was important not to subject Elder Fu to unnecessary tests and costs, he was also implying that such procedures operate according to the written and unwritten rules of a state health care bureaucracy that all

[6] It wasn't usually for physicians to subsidize this account and have to ask patients to pay them back afterwards

must follow. This is in part because the state sanctions not only the prices of individual services, but its dual-track price system permits a price differential across different regions of the hospital, depending on specialty. In essence, for the sake of efficacious therapies such as oxygen, cost differentials across different regions of the hospital must be borne.

I find Allan Young's concepts of efficacy and productivity helpful for sorting out the discrepancy between the prices of beds. In Young's original analysis, efficacy exists prior to productivity on an individual scale and may or may not be replicated as productivity across many individuals. This assumes that the efficacy of a treatment can be accurately assessed as prevention of or recovery from a specific morbidity. Treatments like oxygen for Elder Fu's respiratory exacerbation is efficacious insofar as he would be less likely to suffocate. Productivity, however, not only depends on the efficacy of specific treatments for individual benefit, but how this benefit is distributed across many individuals scattered over time and space. Prices are part of the mechanisms by which a treatment may be made more or less accessible to. In Elder Fu's case, the 4000 yuan that had to be laid down for oxygen did not, presumably make it more efficacious, but it might have diminished its productivity.

As it turns out, however, efficacy is not always so easy to distill apart from productivity, even if a treatment has clearly defined benefit, like giving oxygen to someone with respiratory distress or irradiating the tumors of someone with cancer. Indeed, the distribution of beds in the ecosystem of state-run hospitals can impede the accessibility and availability of treatments, even systemically transform efficacy's structural priority over productivity.

Economies of Scale

Walking up from the outpatient clinic at the outer edge of University Hospital on a tree-lined trail, sprawling inpatient complexes emerge one after another. The Integrated Medicine Department takes up 44 beds in a 25-floor complex and ranks among the smallest inpatient wards. Those looking for the cancer ward would have to travel further up the trail, beyond the animal and microbial research laboratories, to a well-hidden 6-story complex of 1990s vintage sitting next to its 28-story replacement completed in 2017. The department was founded in 1957, when the provincial health bureau selected University Hospital for the first and, for many years, only radiation oncology unit in Hubei province. Five decades later, fifty beds turned into nearly five hundred, taking up the top eight floors of the newest high-rise on campus. In terms of volume and elevation, oncology dwarves almost every other department.

"Economies of scale" refer to the phenomenon of fixed capital distributing across unit outputs so that the greater the output, the cheaper it is to produce per unit (Culyer 2005, 108). In mainstream health economics, economies of scale is an important device for lowering the cost of health care across a large population. The idea is that the cost of a treatment or service requiring an expensive piece of equipment or infrastructure will decline if there are enough patients gathered to receive it. A state-financed comprehensive health care scheme coextensive with China's a large population should then be poised to take advantage of economies of scale, and it is indeed cited as a factor in the efficient uptake of public health extension programs during the 1960s and 1970s (Li 2010, 312). From this standpoint, patients aggregating at large state-owned hospitals should also reap the benefit of lower costs.[7] But if cost reduction really is the outcome,

[7] In interviews with patients, cost is frequently cited as a consideration. See, for example, my conversation with Mr. Guan in Chapter 2.

why did Elder Kang complain of excessive expenses from a routine encounter with the emergency department and actually prefer a bed in one of the smallest departments in the hospital?

Cost reduction makes sense under the general assumption that health care is an expenditure that has to be shouldered by the state in the reproduction of living labor in service of capital engaged in the production of value. The expansion of the welfare state since 1950 across the Northern Hemisphere to cover health care benefits for all its citizens made this basic assumption. But this assumption is not challenged within neoliberal regimes of governance in which traditional sectors of the economy considered an expenditure that liberal states subsidized to industrial capital have been unmoored as potentially productive sectors for finance capital (Harvey 2005). Patients are then treated as productive consumers with little of the state's bargaining power to negotiate the conditions under which they are treated. In the meantime, the duty to remain healthy enough to participate in productive work falls to the individual. As Foucault put it, "the human body has been brought twice over into the market: first by people selling their capacity to work, and second, through the intermediary of health" (Foucault 2004, 16). In China, this path to marketization was opened up after 1980 through the decentralization and privatization of health care financing for individuals as well as institutions. This shift in the infrastructural niche of nominally public hospitals from supplying social services to consumer goods has had important consequences for how the hospital operates down to the types of treatments prescribed.

Dr. Zhao Yide has been well-positioned over the past fifty years to witness this shift on the ground. He joined the department in 1968, straight out of three years of medical school, right at the start of the Cultural Revolution. Born in 1951 to a family of poor farmers, it is rumored

that Dr. Zhao worked as a village health worker in his teens before entering medical school, although he would have been too young to be a part of the statewide training of barefoot doctors in the late-1960s. Reticent about his early education, he confessed that he was kept on staff at University Hospital after graduation because his class background and hardworking attitude won him the favor of cadre leaders.[8] In 1985, a few years after the end of the Cultural Revolution and early in the post-Mao reform era, Dr. Zhao was sent on a state scholarship to University of Lyon in France for doctoral training in radiation oncology. Six years later, with a PhD and experience working as a hospital clinician in France under his belt, he returned to head the Oncology Department at University Hospital. Ten years after that, he reached the pinnacle seat of administration at University Hospital, serving as hospital director for fourteen years before retiring in 2015. Despite having long occupied top leadership posts, few are as forthright in their criticism of the institution.

"Public hospitals no longer serve the public," he declared half-a-dozen times across eight hours of interviews. One time, he went on to explain:

> The 5-year survival of our cancer patients has not changed since Liberation [1949]. Incidence is rising and so is mortality. This has to do with the system (*tizhi*). Lower-tier hospitals hold on to patients they lack the ability to treat. Under Mao, cervical cancer screening did not have to do with personal gain. Barefoot doctors saw anyone who was sick in a village. If you had a cold or a fever, they'll apply simple measures on the spot. If it's beyond their ability, they'll transfer you to large hospitals. This was followed through much better back then.

The best statistical estimates support Dr. Zhao's observations. On average, only about 35 percent of Chinese patients diagnosed with cancer around 2015 will be alive in five years' time (Chen et

[8] See Schmalzer (2008, chap. 4) on the swing of the pendulum between favoring political background and expert knowledge in the Red vs. expert paradigm characterizing Mao-era policy towards science in the 1960s.

al. 2016, 120), about half the odds of an individual diagnosed with cancer in the U.S. (Goss et al. 2014, 490). While acknowledging that devastating lung, gastrointestinal and liver cancers that make up a large proportion of cancer diagnosed in China affect organs in which cures are elusive (rather than those for which a near-definitive cure is often available such as breast or prostate cancers), Dr. Zhao also attributes the abysmal rate of cancer survival in China to structural disparity in the distribution of quality treatments, competent doctors, and patients who need both.

Dr. Zhao and his generation of clinicians lived through the history of this breakdown. An increase in life expectancy from 35-40 in 1949 to 65.5 in 1980 achieved during the Mao-era has been lauded as the most sustained improvement in global public health history, enabled by community-based preventive interventions like vaccination and sanitation improvement (Eggleston 2012). Treatments rendered in tertiary hospitals made up a small percentage of health care services paid for by the state. A three-tier health system composed of neighborhood and work-unit clinics in the cities and village health stations in the countryside at its lowest tier covered almost the entire country by the late-1970s. Fang Xiaoping's study of the history of the barefoot doctors program showed that this three-tier structure of medical referrals operated in alignment with a "proficiency hierarchy" in which expenses increased in direct proportion with the seriousness of illness treated (Fang 2012, 132-139). In the countryside, public health workers who participated in agricultural work part time known as "barefoot doctors" performed simple preventive and first-aid measures, transferring patients to township clinics and county hospitals when the seriousness of the problem exceeded their technical ability.

This three-tier health system was also for a time mobilized to produce knowledge about cancer, as documented in a collection of essays by first generation post-1950 Chinese oncologists. The first centralized cancer hospital was founded at Beijing Ritan Hospital in 1958.

In 1969, the National Office for Cancer Prevention and Control (National Office for short) based at Ritan Hospital was charged by Premier Zhen Enlai with surveying the burden of cancer across different regions in China. Li Bing, the inaugural director of the National Office, notes that after 1969, she made numerous trips to provincial and municipal public health offices to jumpstart programs and facilities for cancer prevention and treatment (Cancer Foundation of China 2000). Urban health care workers deployed to the countryside worked with barefoot doctors to speak with and examine hundreds of thousands of villagers (Hillier and Jewell 1983, 182-3; Yang 2006, 361-98). Regional cancer surveys and screening programs were first carried out in 1958 for cervical cancer around Shanghai and went on to consist of annual Pap smears for factory workers. In 1959, esophageal cancer screening using X-rays started in Henan's Fung County. Surveys later covered region-specific neoplasms such as nasopharyngeal cancer in Guangdong, liver cancer in Jiangsu and Guangxi, and esophageal cancer in the greater North China region beyond Henan (Cancer Foundation of China 2000; Editorial Committee for the Practical Study of Neoplasms 1978, 8). Health care workers at different level of the three-tier hierarchy, including many Chinese medicine physicians, were involved in designing novel programs for collective vigilance in cancer prevention (See Chapters 3 and 4).

In the 1980s, this multi-tier system for prevention and referral became increasingly fragmented. By liberalizing the state medical system, the central government encouraged the rapid adoption of imported medical technologies in its full-throttle embrace of scientific development, even if this came at the expense of channeling resources away from primary and preventive medicine.[9] When Dr. Zhao returned in 1992 from doctoral studies in France, he

[9] Peking University health economist Li Ling (2010, 17) lamented the high profit margins that American drug and medical device manufactures reap by dominating the Chinese health care market. See also Ong (2010, Introduction) and Greenhalgh and Winckler (2005).

stepped into the fray of oncology's rapid rise spurred on by market reforms to both supply and demand sides of the three-tiered system. From the supply side, state subsidies for public hospitals shifted from a flexible to fixed budgetary scheme, which meant that the hospital's extra-budgetary expenses now had to be made up through revenues (Hsiao 1995; Liu et al. 2000). From the 1990s onwards, state subsidies diminished to less than 10 percent of hospital budgets (Barber et al. 2014). Individual hospitals and departments were unleashed in competition against each other for paying clients, on which employee bonuses and departmental budgets depended. At the same time, special allowances were granted to set prices at a profit on high-technology diagnostics and drugs. Distortions in clinical practices toward overprescribing drugs and over-diagnosing diseases across different specialties are well-documented.[10]

Supply-side reforms restructuring hospital financing coincided with demand-side dismantling of universal health care provisions. There is a large body of literature that has explored the aftermath of these policies; I will simply note that for around two decades, less than half of Chinese citizens had health insured. Out-of-pocket health care expenditures for Chinese patients in this period tripled from 20 percent in 1978 to over 60 percent in 2002 in relative quantity. In absolute terms, health care cost rose on average by 16 percent per year, or 7 percent higher than GDP growth, for two decades (Li 2010, 7-8; Yip and Hsiao 2008, 462).

In this environment, coordinated national and regional efforts for cancer screening and prevention atrophied along with collective financing for a public health and primary care infrastructure. A national meeting on cancer prevention in 2009 noted that the day-to-day operations of about two-thirds of all cancer registries in high incidence areas have been

[10] Li (2012) examined over 200,000 prescriptions from hundreds of institutions in China from 2007-2009 on two-to-threefold over-prescribing of antibiotics, corticosteroids and injections. See also Yip and Hsiao (2008) and Hsiao (2014).

paralyzed if not entirely shut down (Zheng 2011, 185). The first standardized national cancer registry, the National Central Cancer Registry (NCCR), was not up and running until 2002 and covered only about 20 percent of the population by the end of 2014 (Zeng et al. 2015; Chen et al. 2014; Chen et al. 2016). Among these, only a small fraction (about 3 percent) reported reliable cancer incidence data in 2015 (Chen et al. 2016, 116). As Dr. Zhao mentioned, the incidence of cervical cancer, which can be effectively prevented by population-wide screening programs based on the Pap smear, has increased since the late-1980s, widening the gap between China and higher income countries (Chen et al. 2016: 124; Chen et al. 2013; Li et al. 2013). More generally speaking, the three-tier referral structure was hollowed out from its base. Smaller hospitals and clinics came under disproportionate strain at the withdrawal of state subsidies and a paucity of patients. With out-of-pocket costs mounting, patients predominantly sought medical attention only when a serious illness had struck, by which point a major city hospital might offer hope for the desperate. The specialized inpatient wards of large urban hospitals have thus become the general setting of clinical encounters and the place where a majority of cancers are diagnosed and treated at incurably advanced stages.

In his effort to nudge medical anthropologists away from focusing on personal experiences of illness at the exclusion of the epistemic and economic totality through which efficacy is reckoned, Allan Young pointed out that an individualist account of efficacy may not translate on the scale of populations (Young 1982). Across large stretches of time and space, what is healthful for one can certainly be harmful for another, and some treatments might cause more harm overall even if a few benefits. We are now familiar with the example of antibiotics efficacious for clearing life-threatening infections producing more virulent infections in the long run when used in industrial quantities (Landecker 2016). But Young did not explicitly take into

account a vast assemblage of clinical interventions that proliferates almost entirely independent of individual and population metrics of efficacy, a medical infrastructure which is rewarded for enabling the continued proliferation of incurable diseases. The structural precedence of efficacy in relation to productivity posited by Allan Young here undergoes reversal: productivity at the institutional level is catalyzed through eroding efficacy for both individuals and populations.

Now, I am in no way making the counterfactual assertation that if cancer prevention and screening programs were more widespread, then the incidence and mortality of cancer in China would be lower. The efficacy and productivity of screening programs has much to do with the precise techniques used, the types of cancers being screened for as well as countless variables affecting the interpretability and actionability of screening results (Löwy 2010). My point is that a historical conjuncture of a neoliberal shift in political economic policies and the proliferation of late-stage cancers through the complex process of "health transitions" in China precipitated the growth of an inpatient infrastructure for cancer treatment (Andrews and Bullock 2014). Under these conditions, the productivity of a health intervention across a population is no longer a relevant organizational metric. Increasingly, neither is efficacy at the level of individual encounters.

In a moment of remarkable irony, the contradictory processes informing Dr. Zhao's ire folds back on his own role in generating inpatient volume at the neglect of efficacy:

> Sometimes I get very angry when I round [on mostly late-stage cancer patients]. But I can't always blame the doctors. Nor can I blame hospital directors. I was once a hospital director myself. At the end of the day, you ask how many patients were treated and how much revenue was generated. You don't ask about how many lived and in what condition.

Dr. Zhao's office sat atop the most expensive and state-of-the-art radiation oncology equipment in the world. Yet, the apical bureaucrat could only afford to be agnostic about the efficacy of the

machinery he has assembled, the costs of which must be recuperated. The result is an unsettling situation where an increasing volume of patients are drawn toward towering cancer centers in urban China to receive treatment without actually recovering. When doctors "don't ask how many lived and in what condition," efficacy becomes derivative and incidental to economic productivity at the scale of the assembled infrastructure. To understand how the scale of the medical infrastructure in effect devalues the production of efficacy to value productivity-in-itself, it is useful to revisit Marx's influential analysis of the difference between fixed and fluid capital.

The Anti-Value of Scale

As Marx wrote in the *Grundrisse*, "The more the material presence of fixed capital corresponds to its concept, the more adequate its material mode of existence is, the more does its turnover time span a cycle of years. Since circulating capital is wholly exchanged first for money, secondly for its elements, it presupposes that a counter-value has been produced equal to its whole value (including the surplus value)" (Marx 1993 [1939], 728-729). Anti-value (or counter-value), often in the form of interest-bearing loans and other forms of credit that covers the cost of maintaining and expanding fixed capital, thus compounds manifold above circuits of value. But if, as David Harvey puts it, capital is simply value in motion, then the overall quantity of anti-value has to exceed the value of the material presence of fixed capital engaged in surplus production at any point in time. The massive excess in anti-value is traded using financial instruments that abstract from fixed capital engaged in "the production of subsequent years" and "anticipating further labor as a counter-value" (Marx 1993 [1939], 731). In other words, interest-bearing loans and other investment vehicles have to far exceed the value of the fixed capital or assets being invested in. Harvey postulates that ballooning anti-value exercises a coercive effect

over the future uses of fixed capital, setting up a paradox of the fixation, as it were, of fixed capital that can never be liberated into circulation in equal portion to the anti-value unleashed. The result is constitutive disequilibrium in the distribution of fixed and fluid capital.[11]

Across China, hospitals have gone through over three decades of fixed capital expansion, including the continuous acquisition of costly medical devices, creating some of the largest hospitals on the planet.[12] Couched in terms of a Marxian analytic of the dynamics of fluid and fixed capital, the built environment of hospitals are a form of fixed capital that "demands its pound of flesh in future value production" (Harvey 2017, 149). The "pound of flesh" that oncological anti-value demands is embodied by the tumors of patients receiving increasingly ineffective treatments. Top-tier hospitals will presumably not default on their loans by selling their services to a regular stream of patients, but lower-tier hospitals often struggle.

Not long after my interview with Dr. Zhao, I traveled with Dr. Wen Kaile, a former student of Dr. Zhao's and a junior physician in the department, to Ruogan General Hospital (pseudonym). We took the train for two hours to arrive at Ruogan, a prefecture-level city of five

[11] The notion of anti-value is useful for thinking through the inversion of productivity and efficacy in hospital medicine. For Harvey, reckoning with the totality of capital as "value in motion" requires thinking about value not simply as the abstraction of "socially-necessary labor time" as classical Marxists are accustomed to, nor as the equilibrium price realized on a market as conventional economists prefer, but in relation to anti-value. The antinomy of value and anti-value arises in what Harvey terms the contradictory unity of the production and realization of value. Capital takes commodity form (M-C) through the organization of production including the built environment, machines and state infrastructure required to bring together raw materials and labor. But the realization of commodity as monetary value at profit (C-M') usually occurs elsewhere in space and time and through the exchange of commodities in circulation. Exchange has to be organized through its own regularized systems of distribution including transportation, logistical negotiations, risk management, and marketing. Across multiple junctures of relative flow and fixity, the production and distribution of value eventually offsets the cost of anti-value over the course of fixed capital's turnover time. See Harvey (2017, 149-150).

[12] The First Affiliated Hospital of Zhengzhou University in Henan province has 7000 beds officially, but more likely over 10,000 with added beds. It is one of the largest hospitals in the world (Murphy and Fu 2016).

million, on its newly built debt-financed campus that almost rivaled University Hospital in acreage. It was one of two hospitals of similar scale in the city. For two years, Dr. Wen has been making monthly trips to Ruogan. He spent the morning in the inpatient cancer ward and the afternoon in the oncology clinic. We saw a total of one patient in the cancer ward; no one showed up to clinic. The built environment of Ruogan General Hospital, while similar in size and scope to University Hospital, was crucially different in one way: it was largely empty of patients.

Dr. Wen, who was charged with managing around twenty patients every day at University Hospital, was not surprised that there was only one waiting for him in Ruogan's inpatient cancer ward. A top-tier regional hospital was after all just a two-hour train ride away. Between sitting in an empty clinic and rounding on a single patient, Dr. Wen's trip revealed another purpose. He brought to Ruogan Hospital a two-hour lecture he had prepared on the foundations of radiation oncology based on passages and diagrams translated from the *Principles and Practice of Radiation Oncology* co-edited in its first edition by U.S. radiation oncologists Carlos Perez and Luther Brady. Dr. Wen delivered a compressed overview of radiation oncology starting with its history in China and Europe to the linear quadratic equations modeling cell survival post-radiation, intermittently apologizing for the fact that a single lecture can never adequately cover a field of such breadth. None of the physicians at Ruogan had received any training in radiation oncology up until then, but it was fait accompli that the physicians at Ruogan would become fully-fledged radiation oncologists. The department had already acquired of a new, debt-financed linear accelerator with a multimillion price tag. Dr. Wen's lecture was the only formal education they will receive before taking the licensing exam to operate the equipment.

Sickness precedes treatment even if patients end up being over-treated, and linear accelerators do not operate themselves. While it might be easy to see how fixed capital exercises a coercive power over future labor in cases of debt peonage, it is unclear how these elements of infrastructure exert such force if they pertain only to a "material presence," in Marx's words. Why have clinical encounters across the Chinese health care landscape been funneled increasingly toward the top of a polarized "proficiency hierarchy"? How do Chinese patients know to congregate at top-tier hospitals, where the quotient of "anti-value" that their treatment cancels out might be proportionately less than at a smaller hospital? What informs their decision and animates their movement? How a specific patient comes to be inserted in one kind of encounter somewhere and not another elsewhere, structural economic analysis cannot specify.

The material building blocks of a hospital do not mobilize patients and physicians over translocal trajectories in seeking treatment without companion infrastructures of disciplinary expertise and knowledge production. A reminder of the stratification within this expert infrastructure was found in the vestibule of Ruogan General Hospital's cancer ward, where Dr. Wen's portrait was on display complete with a description of his academic credentials, including the year he spent in a radiation oncology laboratory at the University of Chicago. This small symbol of prestige may have had the physicians on the oncology ward of Ruogan, who greatly outnumber the patients, as its de facto audience. But it is part a much larger disciplinary infrastructure inflecting the mutual regard of Chinese clinicians for each other and between patients and physicians. This infrastructure has co-developed with large urban hospitals to invert the three-tier system operating in the 1970s from its bottom-heavy setup to its presently top-heavy geography.

Disciplinary Enclosures

For doctors near the top of the professional hierarchy, one would think that the unending influx of patients would be a straightforward boon. But for Dr. Zhao, it is also a burden that threatens to disrupt the discipline of his ward:

> When I get here [to the inpatient ward] in the morning, you see, anyone can just walk in, even without first registering for a number from the outpatient lobby.[13] You never know. And everyone wants to be seen for a bit longer, even though they see that you only have 2-3 minutes to spare for each patient. How can anyone manage 40-50 patients in a single morning? So I think our work is orderly, but it is poorly ordered. We all want this state of affairs to improve, all of us who bring ideas over from abroad, and things are changing.

Here, Dr. Zhao betrays the contradictory sentiments behind his nostalgia for a functional referral system of the 1970s and his reformist embrace of ideas from overseas. After returning from France, Dr. Zhao worked tirelessly to elevate his hospital and affiliated medical school's academic stature, first by forging lasting ties with hospitals and medical schools in France in 1997 and instituting a competitive 7-year medical program with French language instruction that prepared graduates for PhD programs in oncology at the Henri Poincaré University in Nancy.[14] When I first arrived in 2011, bright red signs in French and Chinese were prominently displayed over the tallest building at University Hospital, visible far from the distance.

Dr. Zhao was not alone in this endeavor to uphold the technical standards of Western medicine by strengthening transnational professional ties. Since before the communist era, Western medicine professionals have been keen to elevate the quality of medical education in

[13] Registering a number or *guahao* often requires standing in queue at the registration desk to sign up for an appointment. I have observed that the wait time for most general outpatient clinics are not excessive, with daily and seasonal variations. However, the numbers released for physicians in high-demand, whether because of their specialization or reputation, is necessarily limited, giving rise to scalpers who try to resell the tickets to the highest bidders.

[14] University Hospital's main competitors are the three other university hospitals in Wuhan. Together, these four hospitals are known as the *sidajia* or "four great houses" in Wuhan.

China according to foreign standards. Celebrated as a model of public health success in international forums since 1978,[15] Chinese medical professionals did not all perceive the three-tiered health system to be seamlessly transporting patients across neatly defined levels of proficiency.[16] Slackened academic standards at every level of medical education prompted C. C. Chen (Chen Zhiqian), widely considered to be the father of China's three-tier system, to distance himself in writing from the barefoot doctors movement that had been presented to the world as a resounding public health success story. Chen is credited for having successfully organized and financed China's first community-based, volunteer-staffed rural health care system at Ding County from 1932-1937 that served as the forerunner to the barefoot doctors movement. In the 1930s, Chen had insisted that public health extension in rural China had to rely on trusted volunteers from the local community rather than professional doctors trained to enact an expert clinical gaze (Yang 2006; Lei 2014).

Yet, by 1987, C. C. Chen was writing in his memoir that his model never sought to turn laypeople or traditional medicine practitioners into nearly autonomous clinicians, noting that standards of Western medicine have fallen to such an extent that any graduate of a vocational college can be referred to as a "doctor" (Chen and Bunge 1989, 149). He lamented that medical education in China was preparing graduates to neither effectively guide primary prevention programs nor serve as the final authorities in tertiary medical centers. Years of political

[15] Marking the 30th-year anniversary of Alma-Ata in 2008, an article in the Lancet points to the significance of the barefoot doctors model: "Up to that point only China, with its barefoot doctors supported by communes and work brigades, public housing, education, and other social benefits had demonstrated success on a national scale. For a major international declaration to be based on such limited experience was revolutionary" (Lawn et al. 2008, 920).

[16] Fang (2012) describes a dumb-bell shaped structure that supplied patients with basic treatments at the base and efficiently transported then to tertiary hospitals at the top, but hollowed out in the middle by the end of the 1970s.

campaigns decimated higher education, exacerbating already-strained medical schools with highly uneven pedagogical quality. Around the time Chen was composing his memoir, Deng Xiaoping led post-Mao China on a path of scientific development that once more cemented the social and political prestige of elite academic institutions. To correct the disarray of medical education, state bureaucrats and academic physicians began reforming medicine, often by importing European and North American benchmarks and expertise wholesale.

My presence in the field was aided by such an effort to reform the medical education curriculum at the five-year medical school affiliated with University Hospital. The project was undertaken with long-term consultation from the University of Chicago medical school. Similar efforts to convert from a Soviet to an American educational model have been adopted by medical colleges all over China since the mid-1980s.[17] By 2014, sweeping medical education reform descended from the central government, which prolonged the duration of medical training, adding a mandatory minimum of three-years post-graduate training with very little pay in emulation of North American and European residency training programs.

During the decades of reform, administrative rank within state hospitals all over China became tied to academic credentials (Karchmer 2010). Receiving advanced training from a few months to several years at top specialty departments in the county or, better yet, abroad with the

[17] After 1978, medical school enrollment returned to pre-Cultural Revolution levels and kept rising, but reforming medical education to comply with Euro-American standards has proved considerably harder than economic reforms (Lam et al. 2006, 944). One of the major policy culmination was the merger of over a hundred health professional schools including the majority of Western medicine colleges with major universities. The most direct consequence was a fourfold expansion of student enrollment in Western medicine colleges over the next decade, spurred by affiliation with prestigious universities. In 2000, University Hospital became an affiliate of a nationally ranked university in Wuhan with which its medical school merged. Improvements in the quality of educational content has been thwarted by a plummeted faculty-to-student ratio (Hou et al. 2014, 825). Retention of medical students in the medical field is another major problem.

hopes of getting papers published in high impact journals became a well-trodden path for physicians to get promoted (a path more difficult for traditional Chinese medicine physicians to traverse). When I was conducting fieldwork on the ward in 2017, around a sixth of physicians were visiting scholars from as far afield as Inner Mongolia. If many are those traveling from lower-tier institutions upward, those making the reverse itinerary are far fewer.[18]

Its international reputation prominently displayed in the hospital environment and subtly reinforced through physicians' conducts, University Hospital has no problem attracting paying patients. The problem is that patients find their way in without respecting the disciplinary hierarchy to the same extent as physicians. "Anyone can just walk in," as Dr. Zhao pointed out. To assert discipline, physicians respond by creating enclosures within the enclosure of the inpatient ward, a strategy embedded in the built environment of the new ward.

"We've made great strides," Dr. Zhao reiterated after complaining about the lack of orderliness, "You've seen our new building, the offices all have locks on them. We have no choice but to lock out the patients during our morning discussions. But there are risks to that too. Patients think they can trust you only when they can see you."

Deleuze succinctly summarized the earlier works of Foucault on the operations of discipline in environments of enclosure — families, schools, hospitals, prisons and factories — that individuals in modern societies never cease to pass through (Deleuze 1992, 3). Each enclosure operates by written and unwritten laws embedded in a "microphysics of power"

[18] University Hospital invited American academic physicians for expert consultation, so might smaller hospitals in Hubei province invite University Hospital clinicians such as Dr. Wen to do the same. But Dr. Wen's regular visits to Ruogan and the physicians from the University of Chicago visiting University Hospital cannot approximate the scope and scale of Mao-era expertise traveling to the countryside. Disciplinary stratification has, in other words, steepened within oncology, reinforcing real and perceived discrepancy between local hospitals and top-tier medical centers.

regimenting bodies in time and space.[19] The built environment of the hospital can perhaps be read as the infrastructure of power.

In University Hospital's new oncology ward, a large conference room serves as the doctors' main office on each floor of the new building, to which a set of double-doors are left open most of the time for all to enter and exit: doctors, nurses, patients, even pharmaceutical representatives. The expanded space for physicians to congregate behind locked doors for extended period of time proves to be a major change from the spatial arrangement of the old building. Each of the six floors in the old oncology ward had a small office room about two-thirds the size of a sickroom – space for six computer desks, a sink, a bit of storage and a bit of standing room left for about a quarter of the department. Now, in the morning, the double doors can be locked for thirty minutes to several hours at a time for the whole department to hold case discussions or review the order of business.[20] After this period of scheduled enclosure, the doctors file out and make their morning rounds. If there are no additional conferences or events, the doors remain open to traffic for the rest of the day, to be locked again at the doctors' discretion.

Another disciplinary device in the new building is an exclusive corridor on each floor separated from the rest of the floor by a plexiglass door that unlocks with a card key and a one-way camera monitoring the entrance. Also accessible from the physicians' conference room by a locked door, it leads to the staff's locker room, break room and senior physicians' offices. The office of Director Yi Dakang, Dr. Zhao's former student and successor as the head of oncology,

[19] See Foucault (1995 [1977]), especially the chapter on "Docile Bodies" (pp. 135-169), a disciplinary ideal from which Chinese patients deviate.
[20] On the old ward, twelve physicians squeezed inside an office about a quarter the size, so there was simply no space for the whole department to entertain closed-door discussions.

sits at the end of one such exclusive corridor. In the first few weeks after the move, he repeatedly instructed his staff to keep the plexiglass door locked at all times.

Maintaining these barriers was not without inconveniences and dangers. In the first four months of moving to the new ward, most of the younger staff continued to find it easier to leave all of the doors unlocked. A barrier that on occasion minimized interruptions from patients was more often a hindrance to face-to-face meetings with patients. Moreover, as Dr. Zhao remarked, patients mistrust doctors when they disappear for long periods behind closed doors. Free to move around in most regions of the hospital, quite a number of patients do not shy away from entering physicians' offices on inpatient wards to inquire into their treatment or to complain about perceived mistreatment. Compared to patients in the French and American hospitals with which Dr. Zhao and a few of his staff are familiar, Chinese patients appear far more "undisciplined" insofar as they are more mobile on and off the ward. The newly installed barriers may turn out to enclose doctors from patients more so than the other way around.

While Chinese oncologists are drawn into a global ecumene of biomedical oncologists by enacting discipline around themselves, patients are held at a remove as subjects beyond discipline (see Chapter 2). Aiding and abetting this dynamic are doctors near the top of the administrative hierarchy who retreat even further. Dr. Zhao has officially stopped seeing patients in the outpatient clinic even while he makes weekly rounds on the inpatient ward. Director Yi has chosen to hold clinic in an injection room in the new building that is converted to his office once a week. It seemed that he preferred to be ensconced deep inside the medical campus rather than be exposed to the influx of patients in the outpatient building on the campus perimeter. For head administrators whose gazes are fixed on elevating the academic standing of their department and increasing patient volume, personally treating a large number of patients may

actually disrupt their grip on professional discipline. These differences mark the bureaucratic capitalist enclosures apart from the liberal capitalist disciplinary enclosures Foucault analyzed. They are important to keep in mind as I go on to explore the micropolitics of cancer staging in the next chapter.

Even as clinicians embodying Euro-American discipline retreat from the frontlines of personalized patient encounters, experienced Chinese medicine physicians appear to be their diametrical opposites. From Wuhan to Beijing and Guangzhou, I observed that the more senior the Chinese medicine clinicians invariably distanced themselves from inpatient work to see over a hundred patients a day in their outpatient practices. The volume of patients an individual physician is able to see per day appears to be a key metric of their reputation – a living monument to their virtuosity.

The inpatient enclosures and large hospitals that dominate China's health care landscape are infrastructures to the extent that, while indispensable to the circulation of value and anti-value, they do not function in a singular or deterministic way. Operating by a mobile microphysics of power, *menzhen* and *bingfang* are movable compartments associated with modes of epistemic practice and aesthetic experience. As Brian Larkin observed, "infrastructures operate on different levels simultaneously, generating multiple forms of address" (Larkin 2013, 335). Explored through an aesthetic rather than a functional lens, Larkin argues that anthropologists can reveal how large-scale infrastructures such as roads and pipelines appeal to collective desires and fantasies. In deciphering the Chinese hospital as an infrastructure of power, it is important to return to how this built environment affect and address patients.

The Chinese words for "outpatient" (*menzhen*) and "inpatient" (*bingfang*) can be respectively translated as "examination at the threshold" and "sickrooms." The former is more a

mode of engagement, the latter, more unambiguously a location. Understood in these terms, it wouldn't be surprising to find examination at the threshold taking place within the sickrooms. Patients occupying and not occupying "sickrooms" might, depending on the department, freely enter the doctors' offices on the inpatient wards, bringing with them an assortment of queries. Such impromptu visits that partially circumvent the increasingly rigid disciplinary barriers are still quite common on the integrated medicine ward at University Hospital. In the remainder of this chapter, I go on to explore how a mode of outpatient encounter typical of Chinese medicine might occupy the sickrooms as the stage$_4$, in turn staging$_3$ this piece of the state medical infrastructure within highly personalized therapeutic itineraries.

The Chronicity of Value

Like their oncology colleagues, the doctors' shared office on the integrated medicine ward is also where Dr. Sun and his colleagues retreat after finishing the requisite morning rounds on the admitted patients. A spacious room near the middle of a hallway that runs down the length of the integrated medicine ward, its doors are almost always kept open. Patients drop by to this space throughout the day, often unannounced, where they will usually have their questions answered and prescriptions made out on the spot. The nonplus with which physicians on the inpatient integrated medicine ward respond to patients who walk in and strike up a conversation, proceeding as if they are in the outpatient clinic, contrasts with the suspicion with which Dr. Zhao and Dr. Yi view such "disorderly" visits.

The fluidity between inpatient and outpatient spaces allow conversations such as the one between Elder Kang and Dr. Sun that I transcribed at the beginning of the chapter to regularly transpire in the doctors' office. Elder Kang's discussion with Dr. Sun about the price of her

husband's admission subjected the differential prices across various regions of the hospital to an informal audit. The manner of encounter within which this conversation occurred does more than merely register regional price differentials in the hospital; it is part and parcel of an infrastructure that creates different values for the "same" treatment or service rendered. On a stroll around campus during her two-week admission, Elder Kang told me about how she met Dr. Sun sixteen years ago. Her relationship with Dr. Sun brought to relief the value of temporality, over which a chain of therapeutic encounters unfold.

Sixteen years ago, Elder Kang was 61-years of age, recently retired, and already spending the bulk of her time taking care of an ailing spouse. Then, she developed abdominal cramps. At their worst, these cramps came and went every day for a month. She first visited the outpatient gastroenterology clinics of two different large hospitals in Wuhan. One specialist placed an endoscope down her esophagus and told her she had a lesion that warranted more tests to rule out cancer. Another told her she probably only had chronic gastritis. Unsure about what to do next, Elder Kang ran into a neighbor who offered to introduce her to Dr. Sun.

By her recollection, Elder Kang's first encounter with Dr. Sun proceeded as would any Chinese medicine encounter. Dr. Sun palpated her pulse and examined her tongue, listened to her describe her symptoms in detail, then made out five doses of an herbal remedy comprising around a dozen herbs which Elder Kang took home in equally apportioned packets to be taken daily. After this initial course of herbal treatment, Elder Kang returned for another visit. This time, in addition to a herbal regimen which Dr. Sun continued to prescribe, with revisions, he also made alterations to the rest of her regimen consisting of Western pharmaceuticals. Sixteen years after the encounter, she still crisply remember Dr. Sun's prescription:

Wushi cha — 2 packets taken with warm water, 3 times a day;

> Omeprazole (the least expensive kind) — 1 pill 3 times a day;
> Motilium when all else fails.

Elder Kang had already been taking omeprazole and Motilium[21] prescribed by the specialists from the other hospitals she visited. Dr. Sun downplayed the importance of omeprazole by instructing her that any cheap generic will do, a remark that still drew a chuckle from Elder Kang. Eventually, her dose of omeprazole was lowered to once daily. Dr. Sun also expressed reservations about Motilium, instructing Elder Kang to take it only when all else fails. She eventually stopped taking it altogether. Dr. Sun was the first physician to recommend *Wushi Cha* (Noontime Tea), which Elder Kang still drinks occasionally. It is a patent Chinese medicine containing black tea, bupleurum, mandarin peel, and over a dozen herbs pressed into a freeze-dried powder that can be purchased over-the-counter at any local pharmacy. Together with the herbal medicines that Elder Kang was still taking, Dr. Sun increased the ratio of Chinese medicines to Western pharmaceuticals in her regimen. He thus defused Elder Kang's possible malignancy into a chronic stomach problem that could be managed with an herbal tea.

As Farquhar reminds us in her account of the clinical encounter of Chinese medicine, what is called *kanbing* or "looking at illness" proceeds through a temporal sequence of encounters rather than performing a one-time cure (Farquhar 1994b, 220). Zhang Yanhua moreover notes that Chinese patients seldom submit to the authority of doctors, so "to see the clinical encounter only as a mode of action in which the doctor masterfully deploys knowledge and resources to effect a cure is to miss a basic fact of *kanbing*" (Zhang 2007b, 78). Their

[21] Omeprazole is a drug in the class of proton-pump inhibitors that regulate the secretion of acid in the stomach. Motilium is the brand name of the drug domperidone, which is a widely advertised drug on Chinese television but with a wide array of side-effects including sudden cardiac death. Elder Kang expressed wariness about this drug.

insights extend beyond *kanbing* as a localized event. The first encounter between Dr. Sun and Elder Kang was only the opening act of a sequence of encounters that implicitly invited a revisit. Each time Elder Kang prepared Dr. Sun's prescription into a dark and flavorful brew, she could taste and contemplate whether or not to return to his particular threshold of (re)examination.

The first encounter of "looking at illness" thus inaugurates a mode of enacting, evaluating and valorizing efficacy, mediated over time by flavorful decoctions of herbal medicines. These regimens reveal their efficacy by articulating an embodied knowledge that accords with theories of *yin* and *yang* and five phases, the precise schematics of which I do not have the space to outline here.[22] My point is that herbal medicines are key components for extending the stage[4] of efficacious therapies over time beginning from the first *menzhen* encounter.

Initially, Dr. Sun made no changes to a regimen made out by the gastroenterologists Elder Kang previously visited. He also refrained from ruling out with any test or procedure a malignant pathology that Elder Kang was implicitly worried about. As it turned out, Elder Kang did not have cancer. But finding this out immediately through a costly biopsy was not Dr. Sun's strategy. It would also not have made her stomach pain go away. More than any single test result, Dr. Sun acted as a responsive partner who promised to take notice if Elder Kang's condition changed over time. Elder Kang's second visit was thus integral to constituting the *men* or threshold of *menzhen* as an epistemic device. If Elder Kang did not return, Dr. Sun would not have the opportunity to assess the efficacy of his regimen – to complete the *zhen* or exam. Elder Kang's ability to taste and judge efficacy has an indispensable role in producing the clinician's knowledge of efficacy. Henceforth, the efficacy of specific therapies depends on Elder Kang

[22] See Farquhar (1994a) for an exposition of the five flavors of Chinese *materia medica* and how they correspond to cosmogonic processes described by five phases theory. See Kaptchuk (2014 [1983]) for an accessible summary of Chinese medical theory and practice.

tasting and testing them against a changing constellation of symptoms that she describes to Dr. Sun, against which there could be no overriding metric.

The first five doses of herbal medicines, costing no more than a few hundred yuan, is a commodity that Dr. Sun proffers to Elder Kang for consumption. As she tastes them over the next several days to weeks, his medicines disclose their flavors and she can decide whether or not to return. When she did return for a second visit, she in effect extended a line of credit to Dr. Sun on the basis of the efficacy of his prescription. He was invited to opine over other aspects of her therapeutic itinerary. Eventually, this extends to regular inpatient hospital stays. The epistemic threshold of *menzhen*, shored up repeatedly through the chronicity of Elder Kang's experience tasting batches of herbal medicines, locally reorders the structural priority of productivity and efficacy.

Consider how Elder Kang's initial set of exchanges with Dr. Sun contrasts with what she might have encountered instead with a Western medicine specialist. If she followed the advice of the gastroenterologist, in all likelihood, she would have had to check into the hospital, after putting down an initial deposit, for a surgical biopsy to determine if she had a malignant lesion in her stomach. Prior to making any promise of efficacy, the disease categories provisionally assigned and the pathological specimen obtained are converted into value for the hospital. Since it turned out that Elder Kang did not have cancer (i.e. the biopsy would have been negative), she would have paid for her body to absorb a portion of the anti-value that helped the hospital accrue fixed capital (i.e. the surgical suite) which enabled the procedure to be done in the first place. The anti-value that went into constructing the hospital animated the inefficacious productivity that Elder Kang's therapeutic itinerary would have contributed to.

By giving her therapy prior to making any definitive diagnosis, Dr. Sun's "examination at the threshold" inverts the structural precedence of anti-value and value. The herbal medicines circulate as a commodity that realizes its value when Elder Kang fills her prescription without initially canceling out any anti-value. Elder Kang and Dr. Sun's second meeting continued in the vein of valuing efficacy over productivity, as drugs deemed too expensive and potentially harmful were subtracted from her regimen with the expectation that Elder Kang would continue to improve until proven otherwise.[23] Here, a sequence of encounters begins to constitute a line of credit that, over sixteen years, is gradually converted into productivity for the Integrated Medicine Department when it reaps its returns on a suite of drugs, tests, oxygen and injections that Elder Kang and Elder Fu obtains from Dr. Sun inpatient. However, with each encounter at the threshold, productivity can be pegged again to efficacy, which is in turn pegged to Elder Kang's response to a set of therapies elicited at successive intervals.

The reason for the devaluation of Dr. Sun's bed are then at least twofold. First is the relative inefficiency of Dr. Sun's bed in generating anti-value through excessive treatment for Elder Kang and Elder Fu. Every few months, Elder Kang would request hospitalization for her husband in the event that his breathing has deteriorated to the point of needing mechanically delivered oxygen. These frequent attacks made them especially vulnerable to the cumulative charges that an inpatient stay can inflict over time. But Dr. Sun's familiarity with the conditions

[23] Months later, as I sat in the outpatient clinic of a Chinese medicine physician at the Guangzhou University of Chinese Medicine renowned for treating diabetes, I witnessed a similar process of enacting efficacy in the outpatient setting based on gradually tapering down the burden of therapies. Patients paid three hundred yuan to see this physician, and she easily saw over seventy in a single day. Her marquee prescription for diabetes depended on patients decocting the herbs for several days to weeks at a time, returning intermittently to reduce their dependence on pharmaceuticals until they can go for long periods without taking medicines of any kind and still maintain normal blood sugar levels. The outpatient clinic was thus a threshold over which patients conferred with doctors in order to orient life towards less medicine.

both of their bodies and their lives rules out any easy opportunity for him to prescribe excessive tests and treatments under the cloak of standardized practice, as Elder Kang encountered in the emergency department.

A second and more subtle reason for the relative devaluation of Dr. Sun's bed is its emplacement within a therapeutic itinerary that expands out from the outpatient threshold. Through Dr. Sun, Elder Kang has been able to access a bed which is devalued relative to other beds in the hospital insofar as the credit that she extended to Dr. Sun is vouchsafed by an embodied sense of efficacy. Chronicity hence scales the efficacy of discrete treatments into long-term productivity so long as Elder Kang continues to see Dr. Sun. As Dr. Sun acquire more and more patients like Elder Kang, the credit accrued in the form of a growing reputation does reap its return in the form of a steady queue of patients. The lifelong experience of Chinese medicine physicians, on which an entire department's reputation and income often hinge, is tantamount to their fixed capital. However, the "anti-value" of reputation tends to accrue more gradually.

Over time, Elder Kang's movement in and out of inpatient enclosures while regularly passing through enactments of an epistemic threshold of examination constitutes a regional inversion of an infrastructure of anti-value. In the final section of this chapter, I explore the implications of the regionality of integration that encompasses the inpatient ward.

Constituting the Stage of Integration

Over sixteen years, the problems and queries that Elder Kang has brought to Dr. Sun have long exceeded her initial abdominal pain. As Farquhar described, the practice of eating Chinese medicine, especially over the long run, constitutes "a connoisseurship of embodiment, an aesthetics of *habitus* with its own elaborate technology of self-transformation" (Farquhar 1994a, 481). Elder Kang's two-week admission, during which her conversation with Dr. Sun about the

prices of beds took place, is no different insofar as it involved a condensed evaluation of Elder Kang's symptoms paired with herbal medicines both ingested and injected. Elder Kang as well as other patients on the inpatient integrated medicine ward uniformly describe the experience of their admission to be "tuning" (*tiaoli*) their body to recuperate from chronic and episodic maladies. Tuning describes not just a procedure for targeting an inert physical structure below the threshold of awareness but a process for transforming all sorts of bodily experiences in time and over time (Zhang 2007b, 105).

I suggest, moreover, that the movement of patients across a mobile outpatient threshold and the fixed inpatient ward – in which the former is imbricated in the latter – can be read as trajectories of individual bodily practices. Brotherton's ethnography in post-soviet Cuba described people weaving together such trajectories from different avenues of healing to achieve personal notions of health (Brotherton 2012, 7). Attending to how these trajectories are emplaced vis-à-vis each other on a stage[4] of integration, as it were, moreover illuminating the broader infrastructure of the personal.

A census of the integrated medicine ward reflects the variety of therapeutic itineraries that led to this specific collection of beds. Notably, they defy categorization by biomedical specialties. Of the forty-four beds on the ward, about a third are occupied by former party cadre or other elites with generous state medical coverage, residing in the hospital for long-term nursing care for chronic debilitating conditions like dementia or stroke. Rule-bending is often required to keep these patients admitted on the inpatient ward of a tertiary hospital for prolonged stretches. The physicians on the ward will often repeatedly register the patient using a different medical record number to reset the day of admission so as to not exceed a length-of-stay quota.

Another third suffer from terminal illnesses like late-stage cancer. For these patients, the integrated medicine ward operates like a hospice at times and a "second ICU (intensive care unit)" as Dr. Sun put it, on other occasions. Patients near death often entered the ward for their final admission; in their last moments, a cardiac or pulmonary specialist might be called down to help direct cardiopulmonary resuscitation. Usually, the patient admitted would be well-known to the physician-in-charge who is performing something of a favor to allow a patient to comfortably pass. Such might be the anticipated end for Elder Fu when his time comes.

A final third are the apparently healthy but unwell. This category includes those in a state of "sub-health"[24] without a condition that conforms to a Western medicine diagnosis, who take off a few days to several weeks from work to stay on the ward during the day. The treatments they receive are partly prophylactic against more diagnosable illnesses. Elder Kang during her hospitalization falls into this category: even though she has many diagnosed conditions including heart disease, she was not suffering from any acute or life-threatening debility at the time of admission. Many patients in this category are residents of the surrounding neighborhood, retired employees of the hospital or state bureaucrats for whom the integrated medicine ward serves as a clearinghouse for an assortment of ailments from the life-threatening to the miscellaneous. According to one retired University Hospital gynecologist in her eighties who was also a regular at the integrated medicine ward, the physicians on the ward are true generalists whose varied

[24] See Zhan (2009, 52-58) for a genealogy of the notion of "sub-health" (*yajiankang*) in post-socialist Chinese medicine that focused on overall bodily constitution (*tizhi*) as precondition for Chinese herbal intervention without relying on biomedical diagnosis, thus carving out a preventive niche for Chinese medicine. One routine example I saw across most urban hospitals in China, including University Hospital, is the application of topical herbal medicines at specific acupuncture points during the "s*anfu*" or the three hottest days of summer as prophylaxis against winter illnesses, including influenza. This is in alignment with the conventional Chinese medicine principle of nourishing *yang* during the summer when the cosmic *yang* qi is at its peak to guard against the propensity of becoming ill due to *yang* depletion in winter.

expertise makes them resourceful partners in navigating a wide range of therapeutic resources across the hospital.

The convergence of these assorted trajectories makes it difficult to claim that physicians of integrated medicine only ever prescribe treatments based on sensible efficacy. Chinese medicine departments across the country are not beyond profiting from high-tech interventions and needlessly expensive herbal remedies. The structural logics of anti-value surely mobilize expensive instrumental acquisitions in Chinese medicine hospitals large and small. I even suspected that Dr. Sun might have entangled the circuits of value and anti-value in prescribing a number of tests for Elder Kang during her admission. Because Elder Kang had described a vague pain in her chest, Dr. Sun ordered an EKG and an echocardiogram to check if her chronic heart condition has worsened as well as a mammogram to check for breast cancer. Surprised at the extent to which diagnostic devices are mobilized in search for ailments that Elder Kang most likely did not have, I asked Dr. Sun if these tests were a bit excessive. Dr. Sun's reply was, "I prescribe far fewer tests than Western medicine doctors." I cannot, in the final instance, determine which of these prescriptions generated value and which, anti-value. My point and, in this case, Dr. Sun's point, have to do with the differential regionalization of value and anti-value across the hospital.

This brings me back to my revision on the original advice I received regarding integrated medicine's place in the hospital: "The value of integrated medicine in the outpatient clinic is mediated through Chinese medicine on the inpatient ward." What I mean by this statement has to do with how a regional stage[4] of integration both mediates and circumscribes a hospital infrastructure built on anti-value. Therapeutic commodities like herbal medicines and biopsies should be understood as mediators of value and anti-value in the larger infrastructure of the

hospital even while they materialize different the regional alignments or "stages" of this more diffuse infrastructure. Localizing them to either the inpatient ward or the outpatient clinic ignores their imbrication in these regional alignments.

Herbal medicines that are decocted in patients' homes and on inpatient Chinese medicine wards alike constitute a regional quality to circuits of value and anti-value that transcends both the home and the ward. Their flavors, aromas and textures retain what the philosopher Edward Casey calls "medial qualities." [25] Based on his interpretations of the anthropological works of Nancy Munn, Casey notes that embodied experiences mark points of passage between the strange and familiar, enabling the familiarization of the strange. Across different locations, the medial qualities of substances and activities can emplace unfamiliar spaces like the sickrooms in spatiotemporal alignment with more familiar sites and itineraries. Infrastructural locations brought into alignment are then no longer reducible to bounded locations, just as practices of embodiment are not reducible to the body. If the case of Elder Kang's initial encounters around her abdominal pain brought out the lived contexts of her embodiment, her therapeutic itinerary situated Dr. Sun's inpatient bed in an integrative process of emplacement. The herbal medicines

[25] It was the contribution of anthropologist Nancy Munn (1986) to show that inter-island transactions across the Kula ring mediated through the discrete exchange of arm-shell bracelets and necklaces in clockwise and counterclockwise circuits are connected with the quotidian activities of intra-island food production and rest on Gawa, one island in the archipelago. For the philosopher, Edward Casey (1996), this *locus classicus* of anthropology posits a phenomenology of place which cannot be reduced to locations in homogeneous space. He reckons that thresholds are places par excellence, for they weave together spacetimes of different scales in the trajectories of lived bodies. For instance, the beach on the island of Gawa is a threshold conjoining intra-island life with inter-island adventures not just by its intermediary position between land and sea, but as the site in which argonauts construct their canoes and launch into the sea. Its boundaries porous, thresholds are themselves places that emplace a "collocation of other places."

mediated the eventual occupation of hospital beds, even while the beds themselves have been transformed or "devalued" in relation to other beds in the hospital.

While distinct from an infrastructure of anti-value, the regionality of integration is nevertheless porous in its boundaries. It connects circuits of value and anti-value, putting the vertiginous built environment of contemporary Chinese hospitals into perspective precisely because it is a little out-of-place. The hospital beds allocated to the Department of Integrated Medicine might be devalued as vehicles of medical consumption, they are still a part of the larger infrastructure. For a long-time patron like Elder Kang, there is always the danger that her therapeutic itinerary might deviate from this region of relative devaluation. Such derailments, as Elder Kang found out, can be financially and physically depleting. These regional differences or "stages$_4$" of efficacy have implications on all kinds of encounters and treatments occurring "inside" the hospital. In the rest of the dissertation, I travel to other regions of University Hospital and its larger ecosystem of health care to show that the regionality of integration – even in its absence – can mediate the production and exchange of efficacy.

CHAPTER 2

Deictic Disjunctures: A Case of Tumorcentric Staging

Introduction

Ruan Linxi, a retired Chinese medicine doctor in his 70s, was coughing for about two months before his son urged him to go to the hospital, where a CT scan revealed a mass in his lungs. A pulmonologist then performed a bronchoscopy, which involves inserting a tiny camera on a small guide-wire down his airways to visualize their arboreal branches. With the aid of his camera, a piece of his lung was extracted. Pathologists looked at the extracted tissue under a microscope and saw cancer cells. Mr. Ruan was diagnosed with small cell lung cancer (SCLC) of T2N2M0 or limited disease (LD) stage. I will go on to explain how this exact stage was determined. For now, it suffices to say that small cell carcinoma of the lung is an aggressive form of cancer that carries a dire prognosis,[1] although the "limited disease" stage means that the cancer is restricted to one lung, making it potentially curable.

The Department of Oncology at University Hospital is split into five divisions. Thoracic, gastrointestinal, gynecologic, head and neck together make up the solid tumor divisions, occupying about ninety percent of the department's 465 total beds. The rest of the beds go to the Divion of Lymphoma and Leukemia. My first two months in the department was spent with the Division of Thoracic Oncology, the largest of the five.[2] On the day of my arrival, Mr. Ruan was admitted to this division to begin chemotherapy with the drugs cisplatin and etoposide. According to Xie Mei, Mr. Ruan's wife who spent every night in the hospital sleeping on a cot

[1] SCLC is generally speaking a terminal diagnosis. Over 80 percent of patients diagnosed die from it within 5-10 years (Tai et al. 2002).

[2] I spent about two months on the thoracic oncology ward and then about three weeks each in the head and neck and gastrointestinal divisions.

next to him, her husband threw up everything he ate on the first day and could keep nothing down for the next two days. Before discharge, Mr. Ruan, whose voice was still hoarse after the bronchoscopy procedure, told me that he found an anti-tumor herbal formula in a Chinese medicine journal. It contained four flavors (i.e. ingredients):

> Hardy kiwifruit root (*tengligeng* 藤梨根) 30g
> Prince ginseng (*taizishen* 太子参) 30g
> *Codonopsis pilosula* (*dangshen* 党参) 15g
> Baikal skullcap (*huangqin* 黄芩) 15g

He planned on taking them immediately after getting home.

Two weeks later, Mr. Ruan reappeared at University Hospital for his second round of chemotherapy. Pacing deliberately up and down the corridor when he wasn't hooked up to an intravenous bag, he appeared a different man from his last admission. As intended, he had been drinking the four-herb formula, steeped like a tea without going through the usual, more laborious process of decoction.[3] Over the next three days, he kept drinking this tea while receiving the same two chemo drugs as last time, but without throwing up at all.

This chapter is centered around two interrelated uses of the term "staging": first as a method of assigning a prognosticatory classification to tumors in oncological spacetime and second, as the enactment of object-oriented deixis in interactional spacetime. In the first sense, staging$_1$ enables reference to the progression of cancer. "T2N2M0, LD [limited disease]" represents the oncological stage of Mr. Ruan's tumor. It stands for a distribution of tumors in

[3] See Farquhar (1994a) for a detailed description of this process. An excerpt: "The herbs prescribed are carried home in a collection of paper parcels (one parcel for each daily dose). They must be boiled with water (and often some additives, such as fresh ginger root) in a partly closed receptacle for an hour or more; most households of my acquaintance have a special earthenware pot for the purpose. Many doctors instruct patients to boil the herbs down to half the volume of liquid, refilling with water two or three times to extract the maximum efficacy. Thus the decoction process can be very time-consuming" (1994a, 476).

anatomical space. When held up against survival curves, this sequence of letters and numbers triangulates a particular tumor with the actuarial odds of the patient's survival. The Union for International Cancer Control (UICC) based in Geneva and the American Joint Commission on Cancer (AJCC) based in Chicago jointly serve as the institutional bodies that review and refine the prognosticatory classification of tumors in terms of TNM stages approximately every five years, although for every cancer subtype there exists international organizations that manage databases for continuously assessing how well current staging criteria correlate with prognostic outcomes over population cross-sections over the years.[4] The diagrams, images, tables and survival curves thus updated and assembled allow oncologists to use a common language to refer to tumors even when they are growing inside living persons.[5] In other words, a translocal infrastructure of staging enables everyday signs and gestures in cancer hospitals around the world to refer to the tumor as an oncological object.

Deixis is a broad term designating signs that encode contextual information in the locutionary act (Benveniste 1973, 217-222). Hanks explains deixis as encoding at minimum a relationship between the referent (a denoted thing, individual, event, location, etc.) and an indexical ground or "origo" that necessarily includes the referential event (Hanks 1992, 51). The meanings of deictic terms like "here" and "there" are not predictable in advance but emerge during interpersonal discourse as a projection from the indexical ground to the referent. Linguists who study deixis as a social practice make the important observation that the indexical ground is

[4] The International Association for the Study of Lung Cancer (IASLC) began developing infrastructure to inform the AJCC/UICC stage classification revisions in 1996. See Detterbeck (2017) for the Eighth Edition Lung Cancer Stage Classification and Appendix 1 for a summary.
[5] See Menoret (2002) for a history of the founding of the French Enquête Permanente Cancer (EPC) (Permanent Cancer Survey) set up between 1943 and 1952 which produced the TNM staging system later adopted by the WHO as a "common language" for surgeons and clinicians to permanently record and archive the clinical histories of patients with cancer.

not fixed but emerges in relation to the deictic practices at hand (Duranti and Goodwin 1992, 5; Silverstein 2003).

In these terms, what I mean by staging (or staging$_3$ from the Introduction) can also be understood as the practical operations by which an indexical ground for enacting the stage of cancer emerges in interactional spacetime. Take the following interaction as an example of staging$_3$.

At the time of his second admission, Mr. Ruan got another CT scan of the chest. The following day, I asked Dr. Zuo, his bedside physician (*guanchuang yisheng*) with whom Mr. Ruan most frequently interacts, about how his treatment was working. She told me with audible excitement, "Have you seen his new scan? [It] is significant PR, almost CR [*Kanle ta de pianzi ma? Shi mingxian de* PR*, chabuduo* CR]!" The first part of the statement places Mr. Ruan's new CT scan squarely within the indexical ground of subsequent deictic encoding. The dropped pronoun "it" in Dr. Zuo's locutionary act serves as an anaphora[6] allowing me to register that Dr. Zuo was still describing Mr. Ruan's CT scan even though she makes no repeated mention of it. But if the reference to the CT scan was not enough, the denoted object more clearly emerges from Dr. Zuo's usage of the acronyms from the Response Evaluation Criteria in Solid Tumors (RECIST), a standard guideline used in cancer clinical trials for measuring treatment efficacy based on the extent of tumor shrinkage on radiographic scans.[7] PR stands for partial response, as

[6] Anaphora is a word or phrase projected from one sentence into the next using an indexical token (e.g. pronouns). The lack of an explicit anaphora, known as zero anaphora, that nevertheless carry forward the topic of discourse is commonplace in Chinese.
[7] First developed in 2000, RECIST is a widely used guideline for tracking the extent of tumor progression or regression using an "objective" criteria of change in tumor diameter on CT images. The use of the criteria provided a useful endpoint for phase II clinical trials that screened new agents for evidence of anti-tumor effect is which might have a reasonable chance of subsequently demonstrating an improvement in overall survival or other time-to-event measures

determined to be a 30 percent reduction in the sum of the diameters of all visible lesions; CR stands for complete response or the total disappearance of all visible lesions. “Significant PR, almost CR” describe what was left of Mr. Ruan’s tumor, a fist-sized mass fanning out from the center of his chest on his CT scan a few weeks ago, reduced to a few grey streaks. Even though Dr. Zuo made no explicit mention of Mr. Ruan’s tumor, there was more than enough information from our shared indexical ground for me to decipher the object she was referring to as the tumor.

When deictic illocutions in a techno-bureaucratic environment repeatedly points to an object such as a tumor, a strong argument can be made for ethnographic attention to extend beyond the intersubjective features of discourse (e.g. pronouns, honorifics, styles of address) realized in the episodic encounter. This intersubjective spacetime of episodic encounters has comprised the sociolinguist’s chief realm of interest. But deixis can also encompass a suite of practices that may only be tangentially, if at all, referenced in any segment of linguistic interaction. For Dr. Zuo to project reference to Mr. Ruan’s tumor in the terms of “PR” and “CR,” for example, a suite of technical procedures had to precede the locutionary act. At minimum, Mr. Ruan had to undergo two CT scans separated in time. Other procedures could have allowed Dr. Zuo to instead describe the fixed dimensions of a tumor surgically removed. Before Mr. Ruan’s tumor emerged as a stable part of the indexical ground in the intersubjective spacetime of discourse between Dr. Zuo and myself, it had to be placed in what I call “tumorcentric spacetime” that transcends multiple episodes of interaction. A sequence of procedures entailing multiple instances of intersubjective deixis had to anchor the indexical origo on the tumor before it could be stably tracked across all these episodes. Case in point: “PR” and “CR” are deictic

in phase III studies (Eisenhauer et al. 2009). Useful as a screening measure, it is an imperfect measure of efficacy, as short term tumor shrinkage does not necessarily indicate long-term survival.

signifiers insofar as they are interpretable only by viewing two successive CT scans as referring to the "same" tumor across separate intersubjective spacetimes. The CT scans thus enact a version of pronominal anchoring for the tumor across intersubjective spacetimes analogous to how first-person pronouns anchor the illocutionary subject within an episode of interaction.

I use the term "enact" in the sense popularized by Annemarie Mol in *The Body Multiple*, among other works (Mol 1999; Mol 2002; Berg and Mol 1998; Mol and Law 1994; Mol and Law 2004). Diseases such as atherosclerosis (Mol's example) and tumors are rarely unitary objects belonging to a well-defined subset of reality. In other words, they are much more dynamic than any circumscribed definition found inside a dictionary or a medical textbook. When the nature of these objects becomes a discursive subject within ongoing interactions, they emerge in situ as active participants in the "ontological politics" of constituting their saliences. Mapping these enactments across disparate interactional spacetimes, Mol constructs a network of relations that shows how the nature of reality, based on substrata of entangled objects, multiplies in practice (Mol 2002, 4-13).

When reality itself is multiple, to say that the indexical ground of interaction dynamically emerges might sound like an understatement. But, as I argued in the Introduction, the liberating view of multiplied reality is inadequate for plumbing the layered history of ontologies enacted by leaving out how an object multiplied here might be reduced elsewhere. Going back to the preceding conversation in the doctors' office, the indexical ground of the two interactants, namely Dr. Zuo and myself, presumed that Mr. Ruan's tumor was examined under a microscope and imaged via CT. It presumed the involvement of a hospital infrastructure that gathered all the equipment necessary for enacting an object in tumorcentric spacetime. However, our enactment of the tumor did not discernibly entail Mr. Ruan's hoarse voice, his nausea and loss of appetite,

nor his sense of improvement after ingesting herbal medicines. In other words, "[It] is significant PR, almost CR" is more readily glossed as "the tumor shrank" and not "the patient has improved." If Dr. Zuo was indeed aware of the herbal medicines Mr. Ruan was consuming or how terrible he felt after the first round of chemotherapy, as I later learned she was, this knowledge was suppressed from the indexical ground of our interaction. Even this tiny segment of interaction exemplifies the propensity for object-oriented enactments on the cancer ward to originate from an indexical ground already centered on the tumor to repeatedly refer to the tumor. In other words, tumorcentric deixis is repeatedly enacted on the basis of a previously constituted tumorcentric spacetime. The relevant question is then not how the tumor might be enacted to denote multiple referents in multiple interactional spacetimes, but how a tumorcentric spacetime is repeatedly maintained over and against competing indexical grounds.

For example, the technical register with which Dr. Zuo enacted Mr. Ruan's tumor included not only Mr. Ruan's tumor (enacted through biopsies, scans, computer screens, etc.) but also her assumption that I knew something about how to interpret Mr. Ruan's two most recent CT scans and the terms "PR" and "CR." The indexical ground also encompassed a shared cognitive and perceptive spacetime beyond the spatial contiguity between Dr. Zuo and myself that included her assumption about my prior knowledge of oncology.[8] But, I hasten to add, her remark did not assume that our respective knowledge of Mr. Ruan's ingestion of Chinese herbal medicines had to be shared. Along with an emergent indexical ground, deictic references also emergently demarcate a "we" (medical student and oncologist in this instance) that bracketed off

[8] See Hanks (2009) on the notion of access to a certain field of discourse as encompassing social more so than spatial dimensions. See also Hanks (1992); Silverstein (2003).

some regions of spacetime as more or less salient than others.[9] The regionality of deictic interactions and their differential access for participants during any one interaction arguably carries as great if not greater ontological consequences for what Mr. Ruan's tumor would become than Mol's object-oriented iteration of Geertz's classic observation that interpretive context can be infinitely multiplied.[10]

Staging$_3$ in my usage then entails not only the emergence of objects from enactments *in situ*, but also meta-level practices of privileging certain terms, modes and regions of enactment. To explore both what the object becomes and what it could, but does not, become, I keep an eye on Goffman's observation regarding the regionality of interactional spacetime.[11] In so doing, I

[9] Without intending to make a "straw-man" out of the multiple reality of ontological politics, I outline the distinction between the regionality of interactions that I'm proposing here and the regions that Mol discerns. Arguably, Mol is just as cognizant of the temporality of encounters, it has just be absorbed in the syntax and poetics of *The Body Multiple*, which has the purported goal of complicating the Euclidean space of diseases. Hence, temporality becomes an internalized "indexical ground," even if never explicitly referenced. However, the result of that is an illusion of simultaneity hinged on constitutive blindness to how temporal coincidence is constructed in embodied practice. This comes across in the ways we respectively define regions. For Mol and Law (1994), regions are spaces with definite boundaries. Fluids, on the other hand, do not have neatly defined boundaries. Certain objects and practices are more regional and others are more fluid. Both are allowed to exist at once without much concern about the dynamics of their intersection. My use of the term "region" is taken from phenomenological tradition, in which regions are enacted in interactional spacetime but remain porous as participants restructure spaces over time. Simultaneity is relative and relational in their construction, and objects do not automatically "travel" even when spatial boundaries are assumed to be fluid. An illustration of this is Law's surprise at the dissonance of proposing the fluidity of objects to a Sinophone audience in Taiwan (Law and Lin 2016).

[10] For Geertz, "culture is not a power, something to which social events, behaviors, institutions, or processes can be causally attributed; it is a context, something within which they can be intelligibly — that is, thickly-described" (1973, 14). See, for instance, his example of how the contraction of an eyelid can be interpreted as a meaningless twitch or a wink laden with an infinite array of possible connotations.

[11] Surveying an array of institutional contexts including hospitals, Goffman showed that interactional cues such as footing and register collude and collide with more formal organizational structures to define roles and negotiate social relations. Following Goffman, interactional spacetime can be empirically sorted into frontstage and backstage, in which

also expand upon an important tradition in critical medical anthropology that discerns the ideological underpinnings of the oftentimes incommensurate consciousnesses between doctors and patients.[12] I do not wish to suggest that Chinese oncologists reify tumors as Cartesian objects impervious to ongoing socialization. My aim is to account for the ontological significance of disjunctures as well as the conjunctures between regions of enactment. "Deictic disjunctures" refers to fissures in the shared indexical ground. They can be historical artifacts. Patients and tumors on the Chinese cancer ward are always-already embedded in an infrastructure of the hospital and of integration that manifest competing grounds of enactment from one door to the next, from the integrated medicine department to the department of oncology. Enacting an integrated clinical object, insofar as it is both Chinese and Western, takes the work of synchronizing across disjunctures. Disjuncture might be noticeable as more or less explicit second-guessing in the efforts of maintaining deictic coherence: "I think you were referring to X, but you might have been referring to Y all along." What is at stake is neither the same object seen from different perspectives nor a multiplication of reality, but different stagings of an object differentially accessible to contestation and accommodation.

Tumorcentric Deixis

True to its name, oncology, the science of *oncos* or masses in Greek, is not infrequently centered on the visible masses of cancer. Diagnosing a malignant mass to this day relies on extracting a physical piece of the mass from its site of growth inside the living body. This piece of tissue is a

practices of upholding the front and suppressing the back co-constitute the dynamic privileging of some as actors and others as audiences. See Chapter 3 in Goffman's (1956) *The Presentation of Self in Everyday Life*, "Region and Region Behavior."

[12] A sampling of this important body of literature is bound to include Scheper-Hughes (1990; 1995), Taussig (1980), and Young (1982).

miniature cadaver – a biopsy specimen – which is then fixed in paraffin and brightly stained so its telltale histopathology can be visualized under a microscope. If dividing cells and dysmorphic tissues are seen, the tumor's entire anatomical distribution mapped using imaging technologies such as computed tomography (CT) or magnetic resonance imaging (MRI) is presumed to be isomorphic with malignant growth. In its core dependence on a cadaverous specimen extracted from the patient's bodily interior to metonymically designate the tumor, cancer staging – staging$_1$ as defined in the Introduction – traces its epistemic roots to the medicine of the Enlightenment, where "disease has a land, a mappable territory" from the indispensable viewpoint of death.[13]

With few exceptions, the stage$_1$ of cancer remains constant even as the tumor's dimension and distribution inside the body change over time. "Stage II adenocarcinoma" remains "stage II" even if the tumor has been excised from the patient is no longer visible on the CT scan post-chemotherapy.[14] This ensures that the TNM stage serves as a stake planted at a point in time from which past and future events including treatment, recovery, recurrence and death can be measured. Staging$_1$ marks the clinical birth of the tumor as a fixed origin in the shifting sands of time.

The TNM form of cancer staging, whereT stands for tumor, N for node and M for metastasis, was first used in 1953 by the Parisian surgeon Pierre Denoix and was quickly adopted by the Union for International Cancer Control (UICC) as the "common language" (UICC 2017) by which oncologists can communicate the extent of disease for different (groups of) patients

[13] See Foucault (1973, 149); see also Saunders (2008) for the extension of a cadaverous aesthetics in the modern CT suite. See Dumit (2004) on the fetishized uses of positron emission tomography (PET) for locating complex phenomenon in the brain.

[14] As the American Cancer Society (2015) explains to patients on its website, "An important point some people have trouble understanding is that the stage of a cancer is determined only when (or soon after) the cancer is diagnosed. This stage does not change over time, even if the cancer shrinks, grows, spreads, or comes back after treatment."

(Fleming 2001). As such, the sequence of letters and numbers that encodes the stage of a cancer can be understood as an "immutable mobile" [15] designating each individual cancer as the token of a type. The work of maintaining the immutability of a specific cancer's stage, however, is not encoded in the TNM stage itself. Another way of stating this is that the purely anatomical distribution that the alphanumeric sequence of TNM staging denotes does not encode temporal information. As Keating and Cambrosio noted, "An efficient and useful staging system…is not necessarily very enlightening with regard to the pathological mechanisms underlying the emergence and development of the disease in question," nor does it contribute to informing "immediate clinical management" (Keating and Cambrosio 2007, 223). This opens up the question: how does the technical operations of classifying cancer stages ($staging_1$) articulate with ongoing practices for managing and manipulating cancer ($staging_3$).

$Staging_1$ is not, as one might imagine, an operation of simply matching the spatial distribution of cancer to a linear timeline of disease progression. The Chinese expression of "*fenqi*" for staging brings to relief an atemporal dimension to the practice, which periodizes without implying, as "staging" does in English, that the "period" assigned corresponds to an underlying duration (see Introduction). *Fen* means to divide and *qi* can denote a range of event markers such as a date or a deadline. Understood as "dividing-into-periods," *fenqi* enables change to be marked with respect to a constant TNM designation only when the spatial distribution of tumors and the events of staging are recursively synchronized case by case and population by population. Enacting synchrony between the spatial distribution of tumors and the

[15] Latour (1986) gathered together a sizable body of works on the historicity and priority of the visual culture of Western science once art which puts a premium on inscriptions that does not deform through spatiotemporal displacement, displaying a high level of "optical consistency." An example is longitudes and latitude coordinates for representing regions on a map.

temporal events of staging depends on a complex network of tumorcentric deixis that spans numerous borders.

The term network suggests a flat terrain over which local events transmit across an interconnected system. Nothing could be further from reality. The inpatient cancer ward at University Hospital is full of thresholds, barriers and privileged spaces that limit how persons and things can circulate and communicate. The transmission of some events and the omission of others creates "enclosures" (see Chapter 1) reinforced by interactionally constituted disjunctures. Goffman's distinction between the front-stage and backstage of interactions lends a useful set of terms to track these disjunctures.

For Goffman, social interactions can be split into front- and backstage phases. Careful not to reify this distinction, the frontstage and backstage designations refer to regions of interaction arranged and maintained in social practice analogous to theatrical stagecraft and are not fixed locations.[16] For my purposes, it is easier to assume that this distinction roughly corresponds to a distribution of ritualized activities on the cancer ward so as to inoculate against any illusion of a flat terrain prior to enactment.

[16] In *The Presentation of Self in Everyday Life*, Goffman consistently notes how frontstage performances can be disrupted or derailed, such as when information not meant for the audience and thus, can only be discussed in the backstage, is accidentally disclosed. He devotes an entire chapter on "Arts of Impression Management" to discuss defensive strategies to sustain a performance against disruptive faux pas, challenges and contingencies. However, he also defined the social establishments which he studied through the perspective of impression management as "any place surrounded by fixed barriers to perception in which a particular kind of activity regularly takes place" (1956, 152) and elsewhere describes the "guarded passageways" that commonly connect front and back stages (1956, 70). While I do think physical barriers are necessary albeit insufficient conditions for maintaining the regionality of social interactions, bolstering the salience of Goffman's dramaturgical metaphors, in later works, Goffman (1981) prefers a notion of "participation frameworks" that demonstrates that social interaction involve numerous layers and channels of differentiation through which addressees are more-or-less "in the know." This more abstract notion may prove better adapted to mass mediated societies.

For two months, I spent every Tuesday morning partaking in one of the most important events on the cancer ward: the bedside grand round (*dachafang*). These were long ceremonious affairs led by Director Yi Dakang on the thoracic oncology division and the division chiefs in each of the other divisions.[17] As the train of white coats trundle down the ward, patients or their families would spontaneously line up outside the sickrooms. A few might make inviting gestures to the procession of doctors, as if showing an honored guest into the vestibule of their home. When the procession stopped at the foot of a patient's bed, it is as if a threshold had been crossed. For about four hours, the division's physicians weave between over a hundred beds, stopping by each for Dir. Yi to comment on the occupant's situation.

If patients can easily interact with Dir. Yi, the bedside grand round would not be so significant a ritual. As discussed in the previous chapter, many of the senior physicians in the oncology department have become increasingly inaccessible to patients as they retreat from the outpatient clinic. Aside from the bedside grand round, it would be difficult even for admitted patients to come into face-to-face contact with Dir. Yi. The cancer ward is thus a setting amenable to the sort of interactional analysis Goffman pioneered in modern institutions.

Backstage:"No Meat, No Treat!"

One day during bedside rounds, Dir. Yi led the clinical staff down the corridor, out of earshot from patients, to reiterate a cardinal rule: "no meat, no treat! [*sic.*]" This was a favorite mantra that younger oncologists on the ward at times repeated to me. The phrase is as difficult to translate into idiomatic Chinese as it sounds stilted in English, but it is an abridgement of the full

[17] Even though he was the chief director of the entire oncology department, no single director would be able to round on over four hundred patients admitted onto the ward at any one time. Each of the five divisions has a director.

mantra often cited by European and American radiation oncologists: “Tissue is the issue, no meat no treat” (Rami-Porta 2018). Dir. Yi’s audience at the time certainly knew that “meat” referred to the biopsy specimen and “treat” to a whole suite of oncological therapies. Stated as an imperative in English, the phrase was also a pithy encapsulation of a local commitment to a global (Western biomedical) norm: oncological treatment is assigned according to anatomical and pathological staging classification, for which a biopsy specimen is usually indispensable.

The immediate context that led Dir. Yi to repeat this phrase was a patient wavering at the prospect of being subjected to a procedure in which a long needle is inserted into his chest to remove a small sample of his tumor. Few patients are willing to pay for such an invasive procedure with no direct therapeutic efficacy; the biopsy can thus appear to be an obstacle to accessing life-prolonging treatment. For oncologists, however, the biopsy sample decouples the tumor from the body of the patient and transports it into physicians-only spaces for analysis. It is a critical step that transforms the tumor into a foundational piece of the indexical ground from which clinical events acquire fresh significance. The biopsy is thus an important operation in establishing tumorcentric deixis. Of course, Chinese patients are frequently prescribed anti-tumor chemotherapies without first going through this procedure.[18] These sorts of unstandardized (*buguifande*) practices could have dire legal consequences for the department, not to mention

[18] See Wu et al. (2015). Between 2012-2013, researchers from Fudan University Tumor Hospital in Shanghai surveyed thirty-five level 3 urban hospitals and conducted fieldwork in six level 2 hospitals and one privately operated hospital. The level 3 hospitals all reported using AJCC staging criteria to classify tumors. But the authors observed that none of the smaller hospitals documented tumor stages. The data is skewed insofar as only self-reported data were used from larger hospitals whereas the researchers visited the smaller hospitals in person. (Note that levels 1, 2 and 3 denote administrative distinctions that overlap somewhat with primary, secondary and tertiary in that the higher the tier, the more technical capacity the hospital has to deliver specialized care. However, as noted in Chapter 1, most Chinese patients go to level 3 hospitals even for primary care.)

harm to the patient, against which the oldest oncology department in Hubei province must set a counterexample. Nevertheless, the imperative of staging[1] before treating is easier to uphold when patients are out of earshot, preferably behind closed doors.

By the time I arrived at University Hospital's Oncology Department in 2017, clinical conferences occurred with a regularity that exceeded that of the grand round. Image-reading (*dupian*) conferences, which I call "image rounds," occurred once or twice a week in the morning. In the thoracic and gastrointestinal divisions, weekly multidisciplinary team (MDT) conferences gathered physicians from closely affiliated departments such as radiology and pathology for case-based discussions. Both image rounds and MDT conferences are closed-door events attended exclusively by doctors, sometimes intermingled with pharmaceutical representatives, but never open to patients. I will briefly describe both.

Image rounds occurred in the morning, at the same time as grand rounds, but on different days of the week. Their ostensive purpose is educational, giving an occasion for younger physicians to bring up complicated cases for discussion. The division chifes would often interpret the radiographic scans presented and give recommendations for management.

If the outpatient clinic is a threshold to the hospital as a whole, image rounds take place at the furthest point removed. In the outpatient clinic, patients and their families often bring physical copies of radiographic scans for an on-the-spot interpretation. Physicians usually take no more than a few minutes to "read the films" (*dupian*), a reading usually sparse in the details. The aim is to give immediate, actionable advice, usually oriented towards finding an appropriate site for addressing the problem — the inpatient ward, down the hall at a different department, or a hospital elsewhere in the country — without an exhaustive description of the visible problem.

The spirit of image rounds is quite different. During these gatherings, when images are pulled up and blown up on computer monitors or projected onto screens, a notable shift in affective charge takes place. The occasion takes on pedagogical import reminiscent of the radiographic case conferences that physician-anthropologist Barry Saunders described in a university hospital in the United States.[19] Through such conferences, aspiring radiologists learn to assemble a hierarchy of descriptive possibilities from an image, as detectives might from the scene of a crime. The purpose is not triage, but to enact expertise through a scrupulous verbal rendering of visual evidence.

The affect associated with pedagogical rituals at image rounds was impressed upon me early on when Dir. Yi turned to me one day, within a week of my arrival, pointed to a gray streak on a CT scan which he referred to as "*jijingmai*" and asked for its English translation. Stumbling through foggy memories of thoracic anatomy, I failed to come up with the proper translation of "azygous vein." The structure is an important landmark for orienting the reader of the scan to major lymph nodes, important because the number and location of enlarged lymph nodes determine the "N" stage in TNM. After my stumble, Dir. Yi gave me an assignment: put together a presentation that cover the major anatomical features of the thorax. Just as I started wondering if the assignment was meant to be remedial, he assured me that it would serve as a refresher in medical English for his staff. The embarrassing revelation of gaps in my knowledge was at once mollified and leveraged by Dir. Yi to assert pedagogical authority over me and his staff.

Dr. Wen, a younger thoracic oncologist I befriended, suggested that I stage the tumor of a recently admitted patient, which would conveniently provide a review of thoracic anatomy. Over

[19] See Saunders (2008, 200-218) on the diagnostic and pedagogical ritual of the radiological teaching conference.

the following week, I met Guo Kun, a farmer from a village outside of Macheng in Hubei recently diagnosed with lung cancer but has yet to begin treatment. I gathered his electronic images and pathology reports, correlated them with the 8th edition AJCC/UICC guidelines for lung cancer staging, and ascertained the stage of his tumor. During the following week's image round, I presented my findings:

> Patient is a 64 year-old male with a history of untreated chronic obstructive pulmonary disease, cough and weight loss for 6 months. A space-occupying mass[20] was found on CT suggestive of malignancy. Biopsy and pathology showed a squamous cell carcinoma of intermediate grade. Stage is T4N3M1b, IVa.

This quick summary of the patient's clinical history coupled to his TNM stage is reminiscent of the sort of recitation that the bedside physician makes in front of the director at the foot of every patient's bed during grand rounds. Here, it became the conclusion to my presentation. Encoded in "T4N3M1b" is the size of the tumor (T), the quantity and location of malignant lymph nodes (N), and the extent of metastases (M) in organs outside the lung. Each TNM combination corresponds to a stage from Ia-IVb. Stage IVa is the second highest stage for the tumor type, squamous cell carcinoma, determined based on the histopathological characteristics of Guo Kun's biopsy specimen. Stage IVa carries a prognosis better only than Stage IVb.

This sort of matching operation happens daily on the cancer ward without any fanfare. Once the scans and the biopsy specimen have been assembled, bedside physicians can usually independently assign the stage and determine, *pars pro toto*, the treatment their patients should receive. From a purely technical perspective, my presentation was wholly uninteresting for the

[20] Perhaps no phrase better convey the disappearance of the patient into abstract empty space. Tumors become "space-occupying lesions" — faithfully translated into Chinese as *zhanwei* — a spatial occupation. The term comes in handy for describing radiographic findings suggestive of cancer but, pending biopsy, awaits pathological confirmation of malignancy.

oncologists. But because I gave the presentation in English, it allowed Dir. Yi, who was already fluent in French, to call attention to my pronunciation of common oncological terms and enact simultaneity with a transnational biomedical profession in which English is the lingua franca. Such enactments of translocal and transnational simultaneity, I increasingly discovered, was a key motivation for assembling physicians behind closed doors, within disciplinary enclosures.

My arrival on the cancer ward also coincided with the inaugural meeting of the thoracic oncology multidisciplinary team (MDT). Dir. Yi had pushed for this weekly conference that gathered director-level and rank-and-file oncologists, internists, surgeons, radiologists and pathologists to discuss complex cases. Modeled after the tumor board or MDT meetings in Euro-American hospitals, these rituals have become increasingly popular in large Chinese hospitals in the 2010s, often lubricated by financial sponsorship from multinational drug companies.[21] Some of the cases discussed were selected out of pragmatic concerns (e.g. a biopsy had failed to gather enough tissue and needed the surgeon to make another attempt) or to serve as cautionary tales that usually reassert the importance of accurate staging before initiating treatment. Once, Dir. Yi presented the case of a woman with breast cancer who had metastases to her bones but received surgery on the original tumor nevertheless. Not only did the surgery fail to achieve its intended purpose of curbing tumor spread, it also subjected the woman to needless surgical trauma. All in the audience could quietly gasp at the sloppiness of their colleagues in the Department of

[21] Chinanews.com (2017) reports that the MDT in several large Shanghai hospitals are sponsored by the French pharmaceutical giant Sanofi. A pharmaceutical representative from AstraZeneca regularly attended the thoracic oncology MDT at University Hospital. Representatives from a Chinese genetic device manufacturer gave a presentation during the gastrointestinal oncology MDT at University Hospital. Ties between domestic and international pharmaceutical companies and Chinese physicians, whether through sponsoring professional events, inviting them to lead clinical trials or under-the-table kickbacks, were everywhere apparent on the cancer ward.

Surgical Oncology.[22] More often, evidence of negligence can be traced to a different hospital where the patient was treated prior to proper staging at University Hospital.

But even after initially accurate staging, limitless opportunities for complications arise. As Dr. Wen was fond of saying, "every patient begins as a textbook case, but none ends up as one." Patients discussed during image rounds and MDT typically have had their tumors staged and treated, but returned with complications including toxic reactions to treatment. Under the collective gaze of professional discipline, tumorcentric deixis is reenacted even as the patient's clinical course predictably brings up new problems irreducible to tumor growth.[23]

As treatment prospects and complications are anchored around the tumor, MDT conferences and image rounds reinforce tumorcentric deixis as coextensive with a translocal oncological spacetime. At the start of the first meeting of the MDT, Dir. Yi announced that one of its long-term aims was to publish more papers, citing statistics on the academic productivity of several rival oncology departments after they instituted the MDT. No cases were presented at the first session. Instead, Dr. Yang, one of the younger physicians in the thoracic oncology division, went over the recently published 8th edition AJCC/UICC staging criteria for non-small cell lung cancer. Her slides helped inform my staging of Guo Kun's tumor and are included in Appendix 1 [see especially Figures 1 and 3]. Towards the end of this inaugural meeting, Dir. Yi announced

[22] Significantly, the Department of Oncology does not have a monopoly over chemotherapy or surgical interventions, but they do over radiation. This means that there are other departments including the Department of Surgical Oncology and even the Department of Integrated Medicine that compete with Oncology for patients.

[23] These cases are instructive in their idiosyncrasies, although the ensuing discussion rarely overrules current management. In general, the clinicians are experienced enough to decide what needs to be done without an explicit discussion. Absent pragmatic revisions to the treatment course, attendance at the MDT quickly became a problem during the first four months I was there. Dir. Yi made it mandatory for the younger clinicians in his department to attend but none of the other department chiefs did. The younger oncologists often felt that it was an incursion on their already-intense work schedule.

that his department would from now on adopt the new guidelines. In that instant, Dir. Yi enacted ritual simultaneity between the shared indexical ground of the clinicians present and a global ecumene of oncologists that compiles surveillance statistics on thousands of cases of cancer and updates the TNM staging criteria every few years. Situated within this transnational ecumene of oncological surveillance, "no meat, no treat" applies as much to patients at it does to oncologists.

Frontstage: "Maintain Appearances"

When the stage[1] of cancer moves into the "frontstage" of physicians and patients discussing treatment prospects, tumorcentric deixis often still prevails, but it is now mediated by a larger and more heterogeneous mix of practices and objects. Imaging scans after every intervention — surgery, chemotherapy, radiation therapy and targeted or immunotherapies — revise the boundaries of the tumor in anatomical space. Repeated biopsies are sometimes warranted to check if the tumor pathology remains the same. Radiation therapy begins with procedures that aligns the patient's bodily interiors with the linear accelerator so the tumor can be irradiated within cubic millimeters of accuracy. Targets drawn or tattooed onto the patient's skin indicate the region overlying the tumor. Casts made out of a thermoplastic mesh lock the body in position on the treatment bed to restrict motion artifact, including every heave and sigh of breathing, so that the tumor stays on target. Deictic discourses enacted by patients, their families and physicians are, of course, also part of this mix.

What did "T4N3M1b, Stage IVa" mean to Guo Kun, the 64 year-old farmer from a village outside of Macheng? What Guo Kun knew about the stage of his tumor would have come from his son Guo Jun, who met with Dr. Yang, Guo Kun's bedside physician, on his father's

behalf.[24] In the afternoon of the morning when I gave my presentation, Guo Jun came into the physicians' office to speak with Dr. Yang, his father's bedside physician. They sat side by side, with Dr. Yang facing a computer screen displaying Guo Jun's father's recent brain MRI scan and Guo Jun facing Dr. Yang:

> **Guo Jun**: What does T4… mean?
> **Dr. Yang**: This is the stage of cancer. He was considered stage III before. It was thought to be localized. Now he has this [*points to the bright spot on MRI*], this is a solitary metastatic lesion (*gua zhuanyi zhao*). It's now considered stage IV since it has spread to another site. This means that we have to make some changes to the treatment plan. Before, he had a local problem, so radiation would have been the primary treatment and chemo secondary. Now, it's a whole body problem. The tumor is already in his blood, so we have to make chemo primary and radiation supplementary. This [*points to the bright spot*] currently has no symptoms. We can do radiation to deal with it now or wait until he has symptoms. I recommend dealing with it now.

Dr. Yang answered Guo Jun's question about the cryptic string of alphanumeric symbols by pointing to the bright spot on the MRI as that which moved the stage of his father's cancer from "III" to "IV", equating the anatomical distribution of the tumor, previously seen only on a CT scan of Guo Kun's lungs, with its stage$_1$. But Dr. Yang did not then enact a "trope of equivalence" between the image and the stage$_1$ to the actuarial curves that she presented at the first MDT meeting just a few days ago. Rather than signifying retrospectively constructed survival curves, Dr. Yang transposed "stage IVa tumor" – introduced to Guo Jun just moments ago – onto an ongoing process of cancer growth and dissemination. By postulating that the

[24] In China, adult children often shielded their parents from a dire diagnosis and arranged the details of treatment by proxy. However, it is just as likely that parents play along and guard their children's performance of filiality, as ignorance seems hardly sustainable when they are admitted to a cancer ward, surrounded by other cancer patients. On the politics of concealment and expression surrounding cancer in a different context, see Dwai Banerjee's (2014) dissertation on widespread concealment of cancer diagnosis and prognosis among the urban poor in Delhi.

cancer is "already in his blood," Dr. Yang overlays the two images – the CT scan of the lung and the MRI scan of the brain – with a durational conjecture of ongoing stages$_2$ of dissemination. A sense of duration interposed between Guo Kun's two scans, separated in time, is thus allowed to stand in for an ambiguous temporal process. Tumorcentric deixis here entails turning the new image of the tumor, juxtaposed with the earlier, offscreen one, into an iconic index[25] of the tumor's growth and expansion. A "whole body problem" of tumor dissemination emerges as newly salient, right as Dr. Yang introduces the significance of chemotherapy that now takes precedence over radiation:

Guo Jun: Is it possible for new tumors to appear during chemo?
Dr. Yang: If he responds well to chemo then it wouldn't. If his response is poor then it's possible for new metastatic tumors to appear. Because the efficacy of chemo is not 100%, only 40-50%, so around half of the patients don't respond.
Guo Jun: What are the odds that this could be cured?
Dr. Yang: Rates of cure improves if the tumor is discovered at an earlier stage. About 40-50%.

Deliberately or not, Guo Jun was cross-examining Dr. Yang on whether the ongoing growth of the tumor inside his father was indeed a concern given the tumor's stage$_1$. A response rate of 40-50 percent to chemotherapy is a slight exaggeration for metastatic squamous cell lung cancer.[26]

[25] See Parmentier (1994, 11-19, chap. 8) on the naturalization of conventional signs as icons. In my example, the MRI scan, which is a radiographic photograph of a tumor indexing relations of contiguity and exposure between the tumor and an imaging apparatus at a discrete moment in time, is enacted as an icon that also indexes, through postulated physical contiguity, cancer cells coursing through the body by the physician repeatedly pointing to the scan while alluding to events to which neither she nor her interlocutor can claim to have witnessed.

[26] Response rate refers to signs of tumor shrinkage in imaging scans after treatment. The response rate of non-small cell lung cancer (including squamous cell lung cancer) to platinum-based chemotherapy is closer to 10 percent and may get to 50 percent if three chemo agents are used in combination, but at the risk of significant toxicity. Moreover, the response rate does not correspond to overall survival, only radiographic signs of temporary tumor regression. See Sandler et al. (2000); Cardenal et al. (1999); Comella et al. (2007).

Chemotherapy's effect on "overall survival" or median length of life after initiation of treatment, an important metric of efficacy in cancer clinical trials, is even more controversial.[27] What is not controversial is that metastatic lung cancer is incurable. Dr. Yang shifts Guo Jun's question about his father's chances of cure by referring to an ideal case of early-stage detection and then equivocating around a more palatable statistic of 40-50 percent chance of cure.

In the slides Dr. Yang used just days ago to inform her colleagues of the 8th edition AJCC/UICC staging guidelines, the numbers were unequivocal. Fifty percent of patients with a stage IVa squamous cell lung cancer are expected to be deceased in 11.5 months. About one in ten are alive in five years (see Appendix 1, Figure 3). These statistics were calculated by turning individual tumors into tokens of a type of tumor before patients die so that once they do, their lifespan can measured from the event of staging$_1$. This metric, called length of survival, is then tracked by cancer registries. Between 1999-2010, over 77,000 tumors were staged$_1$ according to the 7th edition of the AJCC/UICC staging guidelines.[28] Expert panels then sorted these patients into population cohorts, compiling average lengths of survival that bundled cohort data to correspond to tumor stages. Survival times fluctuate over time with changing rates of cancer detection, remission, cure, and death. The staging$_1$ guidelines thus have to be updated through periodic and collective retrospection. Compared with lung cancer cohorts between 1990-2000,

[27] See a brief but evenhanded overview of the issue in Buccheri (1991), "Chemotherapy and Survival in Non-Small Cell Lung Cancer: The Old Vexata Questio."
[28] The IASLC (International Association for the Study of Lung Cancer) database used to inform the eighth edition of the TNM classification of lung cancer evaluated 77,156 patients including 70,967 with non-small cell lung cancer and 6189 with small cell lung cancer from 1999 to 2010 (Rami-Porta et al. 2017, 140). These patients originated from 35 different databases in 16 countries on 5 continents. About 79 percent came from Japan, South Korea and the PRC (Rami-Porta et al. 2015, 991).

two new stages[1] were added in the 8th edition to more sharply delineate differences in average lengths of survival for patients with late-stage lung cancer (see Appedix 1, Figure 1).[29]

What patients and physicians tend to background when assessing prospective odds based on TNM stages is that the stages were retrospectively defined by an expert collective to correspond to actuarial curves.[30] When actually confronted with these curves, identifying with a population cohort descending toward the inevitable may bring about a sense of unmooring from the ongoing experience of treatment, remission, recurrence and daily life in between. American anthropologist Lochlann Jain compared her experience of being confronted with a numerical prognosis when diagnosed with breast cancer as being hit by a firing squad of statistics, in which one brushes with the terror of a future foreclosed even as numbers help control and contain that fear. Ejected into a time seemingly outside of the dramas of life and death, "one's future will only be absorbed into the truth of prognosis, a truth that recursively projects a future as it acts as a container for a present" (Jain 2007, 79; 2013).

Survival odds are rarely laid so bare in front of patients on the University Hospital cancer ward (or in any cancer ward, for that matter[31]). Understandably, neither patients nor physicians

[29] Making adjustments to the cut-offs in the size of the tumor (T), the number of cancerous lymph nodes (N) and distant metastases (M) retrospectively brings the different stages into sharper relief.

[30] See Daston's (2012) instructive essay on "The Science of the Archives" that traces the history of early modern science's zeal for collecting as an increasingly vital part of the epistemic endeavors of botany, geology, physiology and astronomy. The laborious and expensive work that went into collecting and depositing observations of planetary transit, for instance, in a permanent archive, hinged on "a conception of a community that of necessity transcended space and time" (p. 187). In its conception of itself as a transhistorical and translocal community that registers the cancerous specimen and survival times of the living and deceased, the line of descent from early modes science of the archives and contemporary oncology appears patent.

[31] Connections can be drawn with what Delvecchio-Good et al. (1990) described as a "political economy of hope" operating in American oncology's remarkable reticence about disclosing prognosis to patients. The authors explain this in part as an extension of a cultural conviction of

want to contemplate the odds of surviving late-stage lung cancer, in which the "truth" of prognosis is closer to a death sentence than a protective container.[32] In this respect, the conversation I transcribed above is somewhat exceptional. In light, however, of the "backstage" enactment of retrospective synchrony with an ecumenical spacetime of oncology discussed in the previous section, I draw attention to the conversation between Guo Jun and Dr. Yang as its "frontstage" correlate for a few reasons.

First, we observe here that as Dr. Yang moves away from a "backstage" exclusive to physicians, the indexical ground of tumorcentric deixis also shifts. In front of Guo Jun, as Dr. Yang's explication of the TNM stage glosses over actuarial lengths of survival to situate the tumor within naturalized stages$_2$ of progression, the indexical ground moves from a professional oncological spacetime, in which the stages$_1$ of tumor form immutable markers for plotting retrospective survival curves, onto a clinical infrastructure for intervening in ongoing disease progression. Stage III warrants radiation, whereas stage IV, a "whole body problem," requires chemotherapy. Staging$_1$ as *fenqi* transforms into enacting the stage$_2$ or *jieduan* of an ongoing process.[33] If the TNM stage is supposed to be an immutable mobile, it does not retain cardinal indexical orientation, as it were, in its transit from the "backstage" of "no meat, no treat" to the "frontstage" of ongoing treatment.

---

psychosomatic entanglement that makes full disclosure anti-therapeutic (curiously absent from other parts of biomedicine, I might add), but they speculate that instilling hope has something to do with organizing expectations around therapeutic breakthroughs on the frontiers of biomedical research that require cancer to be imagined as curable.

[32] As Carsten Timmermann writes in *A History of Lung Cancer: The Recalcitrant Disease*, "The chances of a patient diagnosed with lung cancer in Britain in the early twenty-first century to survive the following five years are not a great deal better than they were 30 years ago" (2014, 4) even with the United Kingdom's robust National Health Service.

[33] See Chapter 1 on the difference between *jieduan* and *fenqi*.

This leads to my second observation, which is that shifts between indexical grounds of tumorcentric deixis might also sediment disjunctures across regions of ontological enactment. On separate occasions, I asked each of the four youngest bedside physicians on the thoracic oncology division the percentage of patients they thought benefitted from the treatments they were prescribed in terms of life prolongation. Three out of four told me that they thought 80-90 percent of patients treated by the department live longer thanks to the treatment they received. Only one said that the odds are about 50 percent, contingent upon what kinds of treatments the patient might have received prior to arrival, among other factors. This one oncologist also noted that the department does not collect statistics on local outcomes, rendering my question impossible to answer. Perpetuating the disjuncture between front and backstage modes of tumorcentric deixis is local agnosticism towards outcomes, a pattern remarked upon also by Dr. Zhao (See Chapter 1).

Physicians are far from being unreflective about their frontstage work of impression management. Dr. Hong, one of the oncologists who averred that 80-90 percent of patients derive survival benefit from the treatments they receive on the ward, also described a component of her work as "maintaining appearances" (*zuo yangzi*):

> For many patients we have to maintain appearances (*zuo yangzi*), let them have their way and protect ourselves. You can't make the situation too tense. If your attitude is too forceful, you might instigate problems with the family. So towards the end [of life], we have to maintain appearances. Sometimes it's a waste of medical resources, like the patient we had to resuscitate yesterday and use blood products even though we knew he was going to die. Sometimes this happens. Some patients are more educated than others. Those who are truly ignorant are in the minority. But you have to repeatedly prepare the family.

While both patients and physicians can act as if individual outcomes unfold independent of poor actuarial odds, the discrepancy between outcome and expectation is difficult to reconcile for late-

stage cancer patients over the course of treatment. Regional disjunctures materialize as enlarging discrepancies between "backstage facts" and "frontstage appearances." As death nears, the work of "maintaining appearances" requires physicians to pursue interventions with growing awareness of their negligible efficacy. Blood products are transfused into the veins of a dying person, for instance, as if they could be revived.

Disjunctures emerge as ontologically significant not just at the end of life. They also sway patients into accepting diagnostic interventions that might make little to no prospective difference. Guo Jun was later persuaded by Dr. Yang into accepting a 3000 yuan genetic test that would collect blood from his father to assess whether Guo Kun might have mutations sensitizing him to targeted therapies, even though these drugs have no statistical evidence of efficacy against squamous cell lung cancer.[34] The influence of a genetic test on Guo Kun's treatment trajectory is thus limited. But, as I show in Chapter 3, genetic tests have become increasingly salient for the production of future treatments.

To note that deictic disjunctures matter is precisely not to say that patients are under false illusions or alienated from their own consciousness. To bring to relief the alienation of patients in U.S. hospitals, Taussig quoted from Joshua Horn's recollections of his experiences working on a Chinese inpatient ward in the 1960s, in which patients freely interacted with physicians, even rounding with them on other patients (Taussig 1980, 8). One perhaps do not find such unhindered interactions among doctors and patients on a contemporary Chinese cancer ward.

[34] The rationale, as Dr. Yang explained, was that there was a 10 percent chance that the pathologist might have misclassified Guo Kun's tumor. If it was an adenocarcinoma, then targeted cancer therapies might help. To my knowledge, however, this was not the rationale presented to Guo Jun. But as I explain in the next chapter, only a minority of adenocarcinomas, usually in women and non-smokers, carry the sensitizing mutation. The chances that Guo Kun's treatment might be altered by the genetic test thus diminishes to nearly zero.

Yet, neither do Chinese patients suffer from what Taussig calls "cultural lobotomization" under a commoditized health care reality (Taussig 1980, 8). As Dr. Hong suggests, physicians, patients and their family have distinct motivations for maintaining appearances and only a minority might be "truly ignorant," however construed. Keeping with Goffman's terms, what we might consider to be "frontstage" for the oncologists might be a "backstage"discussion that a patient's family member is having vis-à-vis the patient. Nevertheless, physicians can be held to account for making and maintaining deictic disjunctures in the first place, especially, as we shall see, when confronted by patients during grand rounds.

Embodied Thresholds

When the train of white coats comprising the entire divisions' physicians and students arrives at the foot of a patient's bed, the junior doctor directly overseeing the patient's treatment usually begins by reciting a formula that succinctly announces the patient's demographic information and tumor specifications. For Guo Kun, this formula might be "64 year-old patient, lung ca. (*fei ka*), *T4N3M1b,* Stage IVa." The alphanumeric code of the TNM stage of cancer here conveniently allows doctors to avoid divulging the severity of the disease. The phoneme used for tumor is "*ka*," a calque of the alphabetic abbreviation for cancer — "ca." — so as to avoid pronouncing the Chinese word for cancer — "*ai.*" An outline of the clinical course then flows from this telegraphic preface. During this phase of the encounter, the patient might interject with questions or corrections. It is up to the director to allay patients' worries about radiation burns, lost appetite, depleted savings and so on to insist that they are on a path to improvement if not recovery.

Switching between expert and lay registers, physicians engage in what Goffman calls "footing," by which alterations in semantics, syntax, stance, tone and other linguistic and non-linguistic markers enact shifts in intersubjective alignment and address (Goffman 1981, 124-159). Most patients lacks the means to fully decode this exchange, so the technical register can create a backchannel for physicians to address fellow physicians, foremost among whom is Dir. Yi, who is usually facing the patient, nodding along or occasionally interrupting his staff's report. In his comportment, however, Dir. Yi singles out the patient, turning the report addressed to him into a sideshow that he and the patient can observe together and articulate in alignment with other, relatively non-technical registers. From the cryptic initial statement to an increasingly explicit dialogue, the director pivots between backstage mimes and frontstage performances as if his body forms a mobile threshold.

In the previous chapter, I introduced the idea of the threshold of the outpatient clinic encounter as an epistemic device constituted by patients and physicians over repeated encounters. I develop the term in this chapter in connection to Anthony Giddens' idea of "access points" within a globally extended expert system. Giddens observed that as expert infrastructures for risk management become increasingly dispersed and impossible to opt out from, uncertainty, far from being minimized, is multiplied where embodied persons can still be encountered as representatives (Giddens 1990, 83-92). It is at these access points that contestations over the coherence of the expert system are voiced and managed. An inverse concept that touches on the same phenomenon in the inverse is that of the "disjunctures" posited by Arjun Appadurai in his widely read essay, "Disjuncture and Difference in the Global Cultural Economy." Appadurai notes that a proliferation of disjunctures has become a defining feature of the epoch of globalization as a large volume of traffic shuttles through geographically distributed spheres of

activities.[35] Where Giddens begins from transnational expert systems to posit their interface with divergent communities and nation-states, Appadurai looks at increasingly deterritorialized peoples, goods, money, technologies and ideologies that break down traditional boundaries of communities and nation-states even as they intensify new disjunctures. Borrowing from both their approaches, I look at the emergence of disjunctures at the "access points" to the expert systems of oncology on both the scale of intersubjective encounters and the scale of transnational flows.

Recent works in STS have looked at how physicians and scientists embody expertise through "mutual articulation" with their subjects/objects, such as when researchers model a protein or when surgeons enter a joint (Myers 2015; Prentice 2013). By attending to disjunctures in intersubjective and subject-object encounters, I argue that mutual articulation goes hand-in-hand with disarticulation as expert subjects move across hierarchically organized epistemic regions. When Dir. Yi stands between the collective assembly of his staff and individual patients during grand rounds, his body actually materializes deictic disjunctures. Across this threshold, competing indexical grounds are juxtaposed and interposed.

The dynamic materialization of disjunctures can be observed when Dir. Yi was confronted with Mr. Ruan during grand rounds, who was skeptical about the effects of biomedical treatments in mitigating his condition from the start:

[35] See Appadurai (1990); See also Hannerz (1989) on increasing global interconnectedness and asymmetry; Ong and Collier (2005) and Marcus (1995) for understanding global interpenetration and contradiction as anthropological problems. A medical anthropological perspective on global flows can be found in Lock and Nguyen (2010) on the globalizing and localizing dynamics of biomedicine analyzed as a set of mobile technologies.

Dr. Zuo: 74-years old, T2N2M0, LD.[36] After two cycles of chemo, his tumor markers went from 51 [ng/ml] to normal. Imaging hasn't been read yet, but major PR was attained, nearly CR. We want him to do synchronous chemotherapy and radiation, but grandpa doesn't want to do radiation. He's a Chinese medicine doctor. His son spoke with Dr. Wang yesterday.

Mr. Ruan: That's right, we don't want radiation.

Dr. Zuo: Almost CR, very effective.

Dir. Yi: LD?

Dr. Zuo: LD, nowhere else. From Chinese medicine's perspective radiation damages yin.

Dir. Yi: Chemo damages *yin* even more.

Mr. Ruan: It's not that it damages *yin*, it's that I might as well go home and take Chinese medicine than do radiation here. It might not be that much worse.

Dir. Yi: Ok, this is a showdown (*duijüe*) between the young doctor (*nianqing de yisheng*) and the old doctor (*laoyisheng*). I'm telling you that you have to do radiation. Think about it carefully. Many experiments have been done to prove its efficacy. If you want to test it out yourself, there's nothing I can do about it.

When Mr. Ruan finished his first round of chemotherapy, the extent to which his cancer regressed surprised even Dr. Zuo. She was aware that it was not uncommon for small cell lung cancer to temporarily recede under the effects of platinum-based chemotherapies, which Mr. Ruan received, even if the disease almost always recurs. Her enthusiasm quickly turned to promoting the next phase of treatment: radiation. Time was ripe for Mr. Ruan to receive radiation in synchrony with chemotherapy; his tumor had shrunk so a smaller volume of his lungs would need to be irradiated, minimizing the toxic effects of radiation.[37]

[36] The TNM staging of small cell carcinoma just classifies by "limited" or "extensive" depending on the anatomical distribution within and beyond the thorax. Thus, even without naming the pathological type or anatomical location of Mr. Ruan's cancer (small-cell lung cancer or *xiaoxibao fei'ai*, Yi Dakang knew that Dr. Zuo was referring to SCLC.

[37] For reasons complicated and not entirely understood, radiation works synergistically with chemotherapy to curb tumor cell division, even if synchronous chemo-radiation is even more difficult to endure than either alone. See *Perez & Brady's Principles and Practice of Radiation Oncology*, Chapter 32 "Basic Concepts of Chemotherapy and Irradiation Interaction" (Halperin et al. 2013).

Radiation was presented to Mr. Ruan as a treatment possibility early on, but he was skeptical. He explained to me using the technical terms of Chinese medicine that his Yin was depleted and he was suffering from excess Dampness. In this context, I interpreted Yin depletion to refer primarily to the depletion of fluids and blood partly resulting from his poor appetite and partly from the chemotherapy he received. Excessive Dampness can manifest as the thick mucus he kept coughing up.[38] This condition was being slowly corrected by a porridge made with prickly water lily seeds[39] that Mr. Ruan had his son bring to the hospital, in addition to the four-drug herbal tea that he continued to drink. Both Yin depletion and excessive Dampness could be exacerbated by radiation, a form of heat toxin which culminates in the lung and can lead to pathological mucus production. Mr. Ruan even dispatched his son to speak to Dr. Wang, the deputy director of the thoracic oncology division and second only to Dir. Yi, regarding his reservations, claiming that if they insisted on radiation, he might not return for the next round of chemo.

Mr. Ruan's suspicions toward radiation as a form of heat toxin is not unique. Patients on the cancer ward sooner or later noticed that as radiation treatment progressed, their skins darken

[38] Yin and yang are relational polarities. Yin refers to the feminine and receptive pole relative to the masculine or active pole of yang which that all things comprise. The backside of the body is yin relative to the front. The shady side of the hill is yin relative to the sunny side. The night is yin relative to the day which is yang. Such examples can be endlessly proliferated. In post-1950 Chinese medicine textbooks, blood (*xue*) and body fluids (*jinye*) are substantial liquid matters, and hence considered yin relative to qi, which is more subtle and invisible energetic system that take on different qualities depending on the particular region of bodily topography in question. When heteropathic changes affect Lung qi, the main function of which is "clearing and carrying downward," pathogenic mucus oftentimes result. Moreover, Spleen qi is which works in tandem with the Stomach to transmute food into blood and fluids is closely related to Lung. It Spleen/Stomach is debilitated, mucus also develops. For both these reasons, chemotherapy that disrupt the appetite can be particularly damaging to Lung qi already weakened by toxic congestion (Sivin 1987, 245-246). For more on *yin* and *yang* in cancer treatment, see Chapter 4.
[39] *Xianqianshi* 鲜芡实 or, more colloquially, *jitoumi* 鸡头米 in Chinese.

and ulcerate and their gut become irritated and inflamed. Patients frequently confronted Dir. Yi with such problems during grand rounds, occasionally prompting the director to tell his staff to revise treatment plans and minimize the exposure of healthy tissue to radiation. When such adjustments were not made in a timely manner, patients suffered from more adverse reactions and treatment might even have to be delayed. Informed of Mr. Ruan's reservations, Dir. Yi signaled that he was no neophyte to "old-style" medicine and readied himself to draw on Chinese medical notions of *yin* and *yang* to assert that radiation was no more damaging to Mr. Ruan's Yin than the chemo he had already been receiving. Yet, just as Dir. Yi was about to engage in an epistemological debate, Mr. Ruan redirected the conversation, stating, "It's not that it damages Yin, it's that I might as well go home and take Chinese medicine."

As Mr. Ruan shifted the conversation away from the epistemic question of "what is" to the pragmatic question of "what if," cancer staging[3] veered from tumorcentric deixis, however multiplied in terms of damaged Yin and dividing cancer cells, to become a site whereby disparate infrastructural regions are brought into temporary alignment. Whether or not Dir. Yi thought that radiation damaged Yin, Mr. Ruan reminded him that it would not alter the patient's ability to depart from the cancer ward and continue taking his preferred treatment. Dir. Yi then warned him against self-experimentation, citing experimental evidence usually only brought up "backstage" among physicians to back up his claim. Diverted from competing epistemologies, both showed their cards, so to speak, of competing indexical grounds while an infrastructure of medical integration emerged alongside tumorcentric spacetime. In the space of confrontation between Dir. Yi and Mr. Ruan, a disjuncture momentarily came into view. With only a few minutes to spare with each patient, Dir. Yi quickly moved on after this exchange.

The next morning, however, Mr. Ruan agreed to proceed with radiation. Mr. Ruan later told me that the previous day, after grand rounds, Dir. Yi returned to speak with him, possibly at the behest of Mr. Ruan's son. According to Mr. Ruan, Dir. Yi told him, "the old doctor should heed the words of the little doctor [*laoyisheng yaoting xiaoyisheng de hua*]," warning ominously, "if it [cancer] recurs it would be trouble [*fufale jiü mafanle*]." Mr. Ruan said that this last phrase swirled in his head all night, leading him to decide that he had better "respect the little doctor."

Here, as Dir. Yi enacted an embodied threshold during another bedside encounter with Mr. Ruan, the most salient feature that emerged was not the discrepancies in epistemic practice or professional affiliation, but an age difference that framed the objects of the "old" Chinese medicine and the "new" Western medicine through the embodied trajectories of old and young physicians. The phrase Dir. Yi used, "should heed the words [*yaoting…de hua*]," is an idiomatic construction commonly used to remind the young to heed the words of their more experienced elders. It takes on a playful, even beguiling quality when Dir. Yi reversed the customary position of the instructor and the instructed, placing the "little doctor" [*xiaoyisheng*] in the position of an instructor to the "old doctor" [*laoyisheng*]. At the same time, labeling himself the "little doctor" [*xiao yisheng*] is somewhat of a demotion from the self-description of a "young doctor" [*nianqing de yisheng*] from their initial confrontation, signaling a softening of attitude.

In their two successive encounters, one could almost see Dir. Yi and Mr. Ruan reenact a confrontation between Chinese and Western medicines, cast in the roles of the young and old doctors. "Old-style doctors" (*jiuyi*) and "new-style doctors" (*xinyi*) featured prominently in Mao Zedong's 1944 speech, "The United Front in Cultural Work" delivered at the Shaanxi-Gansu-Ningxia Border Region, under communist rule even before the end of the civil war. In it, Mao outlined a nascent integrative framework that deemed the new medicine and science to be

superior to the old, while acknowledging that relying solely on the new would be inadequate to relieve the local people's immediate sufferings. Hence, it was imperative that old-style doctors, artists and intellectuals be remolded to serve the people of the region. This historical confrontation between old and new is embedded in Mr. Ruan's family history, as well as the biographies of most Chinese people.

Mr. Ruan's grandfather was a Chinese medicine doctor employed by the famous *Wuhu Zhanghengchun* 芜湖张恒春 pharmacy founded in 1800. From a young age, Mr. Ruan's father taught him Chinese medicine by learning to recognize herbs by sight, touch and smell. In the early 20th-century moment, modernizing intellectuals set out to reframe Chinese traditions in the context of encounters with modern science (Taylor 2005, 16-17). After 1950, the communist state adopted a concerted policy of integration that placed Chinese medicine at every level of health care. Coming of age during this period, Mr. Ruan eventually went through three years of professional training (*jinxiu*) at the Shanghai University of Traditional Chinese Medicine. Mr. Ruan's son carried on the family tradition as a fourth generation Chinese medicine practitioner at a major Wuhan hospital.

If Dir. Yi managed to convince Mr. Ruan to receive radiation treatment, it was aided by his embodying a youthfulness vis-a-vis Mr. Ruan's venerable age, a change in Goffmanian footing that articulated his "new medicine" of oncology with respect to his quasi-filial staging$_3$ of Mr. Ruan's stubborn adherence to the old. We see an embodied threshold of encounter successively transpose the disjuncture between a tumorcentric stage$_1$ of cancer and embodied stagings$_3$ of its progression (tumor vs. Dampness and heat toxin) to a pragmatic disjuncture between the place of treatment (hospital vs. home), to the historical disjuncture between Chinese and Western medicine. Epistemic, pragmatic and historical disjunctures finally articulate as a

difference in age, tentatively bridged through a quasi-filial display of care, even as full reconciliation remains elusive.

Articulation across an embodied threshold might be fruitfully compared to Charis Thompson's concept of a zone of "ontological choreography." Charis Thompson's ethnography of American fertility clinics showed that women's agency and the objectification of their body parts — typically thought of as opposed states or ends — can be dynamically reconciled (Thompson 2005). Objectified body-parts retain metonymic and spatiotemporally extended relations to long-range projects of motherhood. Because the outcomes of fertilization treatment are neither obvious nor assured, agency accommodate or reject objectification as relations between body-parts and whole person rupture or extend over time (Thompson 2005, 179-204). In cancer treatment, long-range projects of optimizing efficacy are likewise open to continuous negotiation, entailing multiple disjunctures between tumorcentric staging$_1$ and embodied stagings$_3$ that need to be repeatedly assessed.

In the confrontations described above, the ontology of Mr. Ruan's tumor went through several articulations before explicitly articulating the long-range expectations of Mr. Ruan's disease recurrence rather than simply reinforcing short-term tumor shrinkage. In this process, the indexical ground shifted not only with respect to Mr. Ruan's tumor and, implicitly, his actuarial prognosis, but also in relation to histories and biographies. In contrast to the transient self-objectification that Thompson described among women receiving in vitro fertilization, Mr. Ruan's tumor was eventually embedded in a collective history of integration readily invoked as part of the infrastructure of contemporary clinical medicine. When Mr. Ruan agreed to 35 sessions of radiation, it was neither because new medicine's facts had emerged as more compelling nor because the oncologists insisted on the tumor as the target of treatment. Staging$_3$

Mr. Ruan's tumor at the threshold of embodiment brought out the dynamic contestation between infrastructures of oncology and integrated medicine.

Tuning Malignant Bodies

Even as Mr. Ruan complied with Dir. Yi's recommendations as a patient, Mr. Ruan's reputation as a physician spread around the cancer ward. Several patients asked him and his son for herbal medicine prescriptions. In this light, Mr. Ruan's acceptance of radiation therapy cannot be simply interpreted as a concession, for not only did he continue to take herbal medicines, his roommates and neighbors on the ward also attributed his short-term improvement to the efficacy of his herbal medicines in addition to, if not instead of, the chemotherapy he received.

Among all the patients I encountered during my time at University Hospital's cancer ward, Mr. Ruan had the singular distinction of being a third-generation hereditary Chinese medicine doctor. But an informal survey of the oncology ward at University Hospital suggests that close to a hundred percent of patients diagnosed with cancer use Chinese herbal medicines in combination with Western oncological therapies.[40] While Mr. Ruan's proximity was a convenient reminder of the availability of Chinese medicine, it was certainly not a necessary one for patients to seek out Chinese therapies to pair with oncological treatments.

In *Sorting Things Out*, a monograph on the modern politics of classification, Bowker and Star looked to the literary works of Thomas Mann and Julius Roth as examples of the "texture" that classificatory infrastructures can impose on lives inside highly regulated institutions, such as the early-20th Century tuberculosis sanatorium. As each resident's clinical trajectories unfold, the

[40] McQuade et al. estimates based on data gathered on survey data from one cancer ward in Shanghai that over 80 percent of patients had use Chinese medicine of one form or another since their diagnosis (2012, 3).

unpredictable course of illness and the complex classificatory schemes observed by physicians change at discrepant rhythms, generating misalignments in experience, expectation, and even one's sense of time (Bowker and Star 2000, 165-194). Bowker and Star used the metaphor of "torque" to depict the texture of a life twisted by these misalignments, shearing against the inertia of the institution. In the context of cancer treatment, patients may only be dimly aware of the misalignments between the global ecumene of TNM staging and the embodiment of individual therapeutic trajectories, but sooner or later, misalignments multiply as treatment stretches on. Most patients start to notice the disjunctures that quietly emerge during their interactions with the oncology staff. As if wary of "torque" building up across these misalignments, many look to Chinese medicine to quite literally "tune" their embodied trajectories back into alignment.

During grand rounds one day, we came to the bed of Mr. Guan, a businessman in his early fifties diagnosed with inoperably advanced lung cancer. He cautioned the physicians as they came to his bed to not overdo it with their "nuclear weapons," referring to the linear accelerators used in radiation therapy. The next morning, I found him chatting with Mr. Chu, a retired primary school teacher from the Hubei countryside diagnosed with lung cancer two years ago when he was 76 years of age. Both these new acquaintances acknowledged that Western medicine is effective at cutting the tumor out of the body, poisoning it with chemicals or melting it with radiation. Chinese medicine cannot "eliminate cancer cells" (*xiaomie aixibao*) with equal efficiency. Yet, both were worried that these tumor-targeted treatments can endanger their long term prospects. Even though Mr. Guan came to University Hospital knowing that it was a large hospital that "does not worry about lacking patients [*bupa meiyou bingren*]" and hence, less likely to dispense treatments that might do him harm for the sake of income, his encounters with

physicians during grand rounds was often tinged with a flavor of suspicion. A few weeks later, after Mr. Guan was discharged, I ran into him at the clinic of Director Liang Limin, chair of the Oncology Department at the Hubei Provincial Hospital of Chinese Medicine (or Provincial Hospital), seeking Chinese herbal remedies.

Mr. Chu took a more proactive path to ward off over-treatment. He was offered surgery at the time of diagnosis, but at 76 years of age, he turned it down and proceeded to visit Director Liang at Provincial Hospital right away. He took the herbal medicines Dir. Liang prescribed for ten months. During this time, he said that his disease "stabilized," although his tumor grew slightly on a repeat CT scan ten months later. His son-in-law then acquired a targeted cancer drug known as gefitinib manufactured as a generic in India (more on targeted drugs in Chapter 3). Mr. Chu took gefitinib for a year before a CT scan again demonstrated that his tumor had grown. Finally, his daughter and son-in-law beseeched him to come to University Hospital for radiation treatment. After twenty sessions of radiation, his tumor shrank even as his skin darkened and began to slough off. Now at 78 years of age, Mr. Chu neither defended nor denigrated the radiation therapy he was receiving. "I really don't care," he said, "It's my children who asked me to pursue this treatment." At his bedside, I found boxes of patent Chinese medicines that he was still taking.

Like almost every patient I interviewed, Mr. Chu and Mr. Guan spoke of Chinese herbal medicine's distinctive mode of intervention as "tuning" (*tiaoli*) the body (see Chapter 1). After aggressive surgical or chemotherapeutic treatment that removed the tumor, Chinese medicine help "tune" embodied trajectories into spatiotemporal alignment. Against what? One asks. This chapter has suggested that the integrative therapeutic trajectories that patients seeking cancer treatment have to frequently bring bodies and objects split by deictic disjunctures into temporary

indexical alignment. But these disjunctures are not simply epistemic, viz. at the level of cognitive misalignment. Oncological treatments may be useful for the immediate excision of a malignant mass, but Chinese medicine helps mollify an appetite destroyed by chemotherapy so rapidly weight loss can be averted. Herbal remedies help sooth radiation burns to the skin and the gut that often require radiation sessions to halt. A remarkable set of prescriptions might even help drain malignant fluids building up in bodily cavities (see Chapter 4). These "side-effects" of oncological treatments are a hindrance not only to a life lived well, but to the continuation of the very same treatments meant to curb disease progression. There is perhaps no better example of torque than a treatment that, over time, precipitates its own untimely termination. The musical metaphor of "tuning" is apt for a practice that brings embodied trajectories thrown into discord with its own unrelenting rhythm back into temporary harmony.

It is no coincidence that ingesting herbal medicines can bridge disjunctures and dampen the effects of infrastructural torque. *Chinese Medical Oncology*, a textbook edited by Dr. Zhou Daihan of the Oncology Department at Guangzhou University of Chinese Medicine, explains how Chinese medicine retunes the body in conjunction with tumorcentric treatments. "Patterns [*zheng*] reflect the multi-staged nature [*jieduanxing*] of a disease […] 'Same disease, different patterns' refers to a disease state that displays different illness patterns as a result of its differing origins, the sufferer's bodily constitution, and the stage [*jieduan*] of disease progression."[41] Dr. Zhou here alludes to a well-known divide between Western medicine and Chinese medicine in the clinical significance they respectively attach to disease (*bing*) and pattern (*zheng*). Where

[41] See Zhou (2007, 36); in the same passage, he also discusses all possible combinations of disease and pattern (same disease, same pattern; different disease, different pattern; different disease, same pattern), focusing the most attention on their discrepancy for their clinical relevance and complexity. See Chapter 4 for a fuller discussion of the discursive network surrounding *bing* and *zheng*.

patterns describe the temporal trajectory of a sickness unfolding, they are destined to change even while the biomedical diagnosis stays fixed. Chinese medicine textbooks often attach a number of patterns, typically a sequence of four to eight characters summarizing the main qualities of an illness presentation, to a corresponding biomedical disease. In this advanced introduction, Dr. Zhou implies that combinations of diseases and patterns can refer to the dynamic stages (*jieduan*) of a sickness process, or what I have been indicating as stages$_2$. Discrepancies between a constant tumorcentric diagnosis and the variable stages$_2$ of cancer can be represented by a changing constellation of patterns.

I will expand on the practices and politics of integrating patterns and diseases in Chapter 4. My purpose in this chapter has been to underscore the proliferation of deictic disjunctures across an expert infrastructure and the embodied thresholds through which they materialize and may occasionally realign. As I've repeatedly pointed out, "*fenqi*" brings out the classificatory operations of assigning a stage$_1$, requiring oncologists to meet periodically behind closed doors to synchronize population cohorts with their prognosis from the perspective of death. The stage$_1$ of cancer based thus on the classification of cadaverous artifacts does not automatically correspond to a prospective clinical trajectory. As my example of Dr. Yang's conversation with Guo Jun about his the stage$_{1/2}$ of his father's cancer suggests, a "front-stage" enactment of the TNM stage slips toward indexing prospective stages, for which pragmatic considerations of the treatments available takes precedence over likelihoods of survival. A disjuncture appear between retrospectively configured tumorcentric stage$_1$, the regular maintenance of which relies on a global infrastructure of cancer registries, and the local treatment patterns of the Chinese hospital. The stage$_1$ of cancer (*fenqi*) begins to realign with the stage$_2$ of treatment (*jieduan*).

Jieduan in Dr. Zhou's theorization more aptly refers to intertwined disease processes and treatment effects that unfold over time. If the body is indeed multiplied in the process, it is not the default coherence of bodies that hang-together through spatial co-presence and co-dependence (Mol 2002, 119-150). Rather, the multiplication of the stage of cancer – as stage$_1$ and stage$_2$ – entail the synchronic articulation of different clinical trajectories through embodied staging$_3$.[42] Encounters over what I have been calling the "embodied threshold" of the cancer ward enables clinicians and patients to grapple with different possibilities of recovery, recurrence and death, in the process redistributing epistemic, pragmatic and even historical objects from the cadaverous artifact of the tumor to responsible, living agents.[43] An infrastructure of integration can then be recognized as that which allows a bundle of possible clinical trajectories routinely separated by deictic disjunctures to synchronically articulate – a clinical epistemic process colloquially known as tuning.

When Mr. Ruan and Dir. Yi staged the disjunctures between their epistemic and pragmatic focuses, treatment priorities no longer necessarily orbited the tumor. Reenacting the historical encounter between Chinese and Western medicine brought their embodied persons into dynamic articulation as proxies of competing prospects of treatment. When Mr. Guan and Mr. Chu visited a Chinese medicine clinic before and after receiving oncological treatments, they also realigned the stage$_2$ of their sickness through staging$_3$ it across the threshold of the outpatient Chinese medicine clinic. An infrastructure of integration all three accessed was able to

[42] Similar events of articulation have been described by Stacy Langwick (2008) in a Tanzanian hospital. In Langwick's terms, the body becomes a "sites of assemblage" inside the hospital, over which nurses mediate the commingling of traditional medicines and modern therapies, especially when the latter fail to deliver the expected results.

[43] See Munn's (1990) analysis of an episode of illness in Gawa showing how the body of the afflicted becomes a site of forensics that attributes responsibilities depending on its emplacement across a changing spatiotemporal horizon as a single episode of illness is revisited over time.

operationalize the assumption that the tumor attacked by surgery, chemotherapy and radiation was not the only malignant culprit. Tumorcentric treatments can be just as malignant as the tumor treated in endangering one's prospects of recovery. These dangers are brought into focus through tuning, which treats bodies not only as contained volumes to be mapped, but also as that which speak volumes.

CHAPTER 3

Experimenting with Experience: A Case of Blind Ingestion

Introduction

The daring, desperate, and filial son makes a last ditch effort to save his mother diagnosed with terminal cancer. He dons a mask and slides on gloves before carefully measuring out a precise quantity of powder with the sliced-off tip of a straw. The powder is an active pharmaceutical ingredient (API) of a targeted cancer drug. Such drugs known on international markets by their brandnames can cost upwards of tens of thousands of U.S. dollars for a month's supply. In China, they are also traded as APIs under investigational drug names and cost a fraction. Tagrisso, a lung cancer drug developed by the Swedish-English pharmaceutical company AstraZeneca, costs 15,000 USD for a month's supply on the official Chinese market. It is also known as "AZD9291" or simply "9291" and can be procured as an API for about 400USD a month in China. Handling the API powders require extra precautions; at the very least, gloves and masks help prevent dermatitis and respiratory symptoms. On online patient forums in China, instructions for preparing the powders are widely available.

The figure of the desperate son is featured in a number of online stories broadcast via mainstream Chinese and English media outlets reporting the plight of Chinese cancer patients (Wee 2018; Campbell 2016; Yuan 2016). He is emblematic of the crisis in pharmaceutical access most proximally caused by the prohibitively high prices of patented cancer drugs and their exclusion from national health insurance plans. While home-processed APIs are dramatic workarounds, in all likelihood, more Chinese patients acquire generic versions of such drugs smuggled mostly from India. Chinese moviegoers have become familiar with the tale of Lu Yong, who started a "buyers' club" for patients with chronic myelogenous leukemia to traffic

generic imatinib from India to China starting in 2002. His story was dramatized in the 2018 blockbuster film, *Wo bushi yaosheng* ("I am not a drug god" marketed as *Dying to Survive* in English) by the director Wen Muye.[1] The film's box office success set off waves of discussion online and offline, achieving a level of popular resonance that might have even spurred Premier Li Keqiang to make public statements about the plight of Chinese cancer patients and to push for the inclusion of several targeted cancer drugs in provincial health insurance plans.[2] Suffice to say, media representations of illicitly trafficking life-saving remedies have affected state policy and deserve their own study. My focus in this chapter is a subject that most of these mass media portrayals leave out: practices around blind drug ingestion, or the consumption of drugs beyond the purview of formal medical surveillance, that challenge the very basis of the efficacy of targeted cancer drugs.

Blind ingestion, I argue, challenges not only the legal infrastructure ensuring (or impeding) the distribution of a growing number of precision pharmaceuticals known as targeted cancer drugs. It is a practice that challenges the very infrastructure for producing their efficacy.

[1] Lu Yong is a controversial figure in China. He rose to fame in 2015 when the Yujiang Municipal Procuratorate of Hunan province dropped their charges against him for credit card fraud and illegal sales of counterfeit drugs, for which he was prosecuted two years earlier. He has continued to personally purchase generic imatinib from India, distributing them to customers in China, while at the same time running a medical tourism company to bring Chinese patients to India. The efficacy and potency of the drugs he imports from Indian has been under scrutiny. See Jin (2017) and You (2018).

[2] See Han (2018) and Song (2018) for news briefs on the Chinese government website on Premier Li Keqiang's response to the film.

Efficacy and Surplus

Not long ago, modern treatments for cancer consisted of crude methods of surgery, radiation and chemotherapy, the proverbial "slash, burn and poison." They were crude not only because the simplicity of the treatment lagged behind cancer's infamous wiles, but also because the lucky few who were cured had to first survive the brutal treatment.

After the 1980s, hormone therapy, targeted therapy and immunotherapy began emerge as more precise pharmacological remedies for cancer. The targeted cancer drug Gleevec, also known as imatinib, is one of the most important breakthroughs in modern oncology.[3] Unlike chemotherapies that poison healthy and cancerous cells alike, targeted cancer drugs inhibit a specific protein aberrant in cancer cells. Imatinib inhibits a protein belonging to a family of enzymes known as "tyrosine kinases" that catalyze the attachment of phosphate groups to proteins, switching them on and off. By taking a Gleevec a day, chronic myelogenous leukemia or CML, once a uniformly fatal disease, went into sustained remission for about 80 percent of the afflicted. Its efficacy, stunning by any metric, is often cited as proof for the concept that the genetic "drivers" of cancer growth can be converted into its Achilles heel.[4]

[3] It had been known since the 1970s that a class of enzymes that phosphorylate tyrosine residues in protein called "tyrosine kinases" are found in abundance in cancer cells. Imatinib was first synthesized by chemists at the Swiss pharmaceutical giant Ciba-Geigy (now part of Novartis) in a program that produced hundreds of molecules that might interact with tyrosine kinases in general without specific disease targets. Brian Druker, a physician researcher at Dana-Farber in Boston, later identified the Philadelphia chromosome as the aberrant fusion product of two bits of chromosomes which drives leukemic cell division. He pushed to get the Swiss Pharmaceutical company Ciba-Geigy to get imatinib tested on patients, closing the loop from drug to target. See Mukharjee (2010) and Wapner (2013).

[4] For a discussion of the prominence of the concept of driver mutations as the Achilles heels of malignant tumors, see Pao and Chmielecki's (2010) review article on EGFR TKIs. This metaphor is also repeatedly used in Siddhartha Mukherjee's (2010, 405-411) celebrated history of oncology.

Beyond imatinib, the tyrosine kinase inhibitors or TKIs class of drugs also include targeted therapies for lung, breast, gastrointestinal and renal malignancies. Appearing around 2017, Tagrisso (osimertinib) counts among one of the newest TKIs (targeting the epidermal growth factor receptor (EGFR) class of tyrosine kinases) and is especially significant in lung cancer treatment. But when these "precision" molecules are ingested "blind," without care for the tumor's mutation status, the efficacy of these drugs start to dissociate from a purely mechanistic model of malignant cell replication.

Blind ingestion (*mangfu*) is a controversial practice that refers to taking targeted cancer drugs outside of the indication of having a genetic mutation which makes the tumor uniquely vulnerable to the treatment. Patients who acquire targeted cancer drugs through illicit avenues often circumvent the genetic tests recommended by oncological experts in China and abroad. Wu Yilong, a renowned oncologist at Guangdong General Hospital and head of the Guangdong Lung Cancer Institute surveyed over a few hundred patients over three months and found that about a quarter of them had blindly ingested targeted drugs, which in all likelihood is an underestimation (Chen 2018). Why would drugs so arduously procured be consumed without confirmation of mutation status, when they might not only be useless but to cause a host of toxic reactions?

On this point, an obvious but often neglected technicality is that most targeted cancer drugs, especially for solid organ tumors such as lung cancer, do not extend disease remission for very long. Gleevec, which treats a condition with a chronic course to begin with, is an exception to the rule.[5] The effects of precision therapies vary depending on, among other things, the

[5] Gleevec is an exception to this rule due to the idiosyncrasies of CML. It is a rare form of leukemia that enters a deadly phase of proliferation through what's called a "blast crisis." Long-term inhibition of single signaling cascade for this transformation could in theory and practice reduce the risk of blast crisis, but resistance can develop especially after an acute transformation. See Graham et al. (2002) and Greaves & Maley (2012, 311).

tumor's location, cellular mutations, and innumerable micro- and macro-environmental factors. Lung carcinomas initially sensitive to TKIs tend to develop resistance in under a year (Wang et al. 2016). Patients taking targeted cancer drugs were deploying partially efficacious but highly costly drugs with multiple other treatments in combination over time. The timing of for switching therapies then depends on carefully charting the efficacy of an evolving regimen using a battery of diagnostic tests. In this endeavor, Chinese patients are both aided and impeded by state health care experts as they forge tentative alliances with enigmatic substances and deepen the grooves of shared experience. When drug ingestion is understood as a historical practice, efficacy becomes more complicated than the properties of a single molecule. Needless to say, there is no such thing as a pure pharmaceutical molecule that precedes its embodiment, interpretation and socialization (Hardon and Sanabria 2017; Whyte, Van der Geest and Hardon 2002).

Broadly put, the specific historical conjuncture at which blind ingestion emerged in China can be traced as the confluence of an ethos of collective experimentation encouraged by Mao-era mass mobilization with post-Mao production of experimental subjects within globalized clinical trials. I chart this convergence as three intertwined threads coeval with macro-political transformations that took place in the last forty years.

First, the dissolution of communism in the East and welfare states in the West during the 1980s exposed an unprecedented number of people around the world to a new level of economic precarity (Solinger 2009; Harvey 2005). This has had a number of consequences on the accessibility of health care in post-Mao China. Melinda Cooper has explored how the systematic hollowing out of universal health care in China led a growing number of patients to become "experimental subjects" (Cooper 2011, 324). Sunder Rajan and Petryna have separately

examined the rise of experimental subjectivity in relation to the off-shoring of clinical trials from Western countries (Sunder Rajan 2006; 2012; Petryna 2005; 2009). Multinational pharmaceutical companies and their subcontractors have since the 1990s taken advantage of relatively impoverished and exposed population segments in newly liberalized economies of India, China, Eastern Europe and Latin America available as trial subjects. As the seriously ill and socially vulnerable take on incalculable embodied risk in exchange for access to vital treatments, Melinda Cooper and Catherine Waldby calls participation in clinical trials under such unequal conditions "clinical labor." Clinical labor is bought and sold under highly asymmetrical arrangements, where experimental subjects take on visceral risks of unpredictable magnitude in exchange for monetary compensation or access to treatment. As they undergo "transformative exposure" (Cooper and Waldby 2014, 135) experimental subjects become the living crucibles of biomedical efficacy.

Post-socialist countries including China and Eastern Europe have become attractive sites for clinical trials because an infrastructure of centralized hospitals employing highly trained health care workers, the groundwork of which was laid in the socialist period, remains largely intact (Cooper and Waldby 2014, 158). This takes me to the second historical dimension of blind ingestion: the transition from a Mao-era primary preventive infrastructure enabling mass mobilization for collective experimentation to a medicine of risk management centered in large Chinese hospitals.

During the Cultural Revolution, "bottom-up" mass science came into peak political style. In all areas of science, medicine and industry, initiative would ideally arise from the proletarian classes of workers, farmers and soldiers situated to identify the most urgent problems and devise pragmatic solutions; educated experts were looked to for technical back-up. While these

initiatives often coexisted in tension with "top-down" state agendas, the former undeniably shaped the scientific process (Schmalzer 2008; 2016). I explore the specific influences of mass science on drug trials and clinical experimentation, relevant to the contemporary case of blind ingestion, with the examples of arsenic trioxide for leukemia treatment and artemisinin as an antimalarial both developed during the 1970s.

As I've alluded to in the last two chapters, post-Mao fiscal reforms coupled with an expanding hospital infrastructure with its requisite enclosures of professional discipline moved clinical encounters away from neighborhoods and villages towards urban mega-hospitals. This chapter will strive to show that inpatient enclosures also operate within a regime of risk management crucial for an infrastructure of clinical trials. In fact, I argue that it is only in relation to a globalized regime of clinical trials that blind ingestion appears blind.

With different emphases, many scholars have described a transition over the past six decades in the U.S. and Western Europe, variously labeled as from medicalization to biomedicalization, from dangerousness to risk, or from hospital medicine to surveillance medicine.[6] What they observe in common is a drift from a disciplinary apparatus that encloses pathologized individuals, such as in the quarantine of mental illness or infectious diseases, to a generalized quantification and optimization of a dossier of risk factors across hitherto "normal" populations. As analyzed by Kaushik Sunder Rajan and Joseph Dumit, these transitions have moreover been captured and propelled by circuits of capital (Sunder Rajan 2005; 2012; Dumit 2012). More so than describing the disciplinary transition within medicine, the political

[6] See Clarke et al. (2003), Castel (1991), Armstrong (1995), Deleuze (1992), Hardt (1995) and Fraser (2003). Each of these thinkers, but Fraser perhaps most lucidly, point out that this historical transition is not a total break but an extension and modulation on preexisting and still powerful disciplinary infrastructures.

economic transition of pharmaceutical production better clarify the specificity of cancer as an object of risk management. Here, professional medical enclosures and experimental subjectivities converge with a third dimension of the historical conjuncture of blind ingestion: the ontology of cancer.

Epidemiologically, there are more people in China now with advanced-stage cancer than ever before (Chen et al. 2016). The collapse of a preventive health infrastructure in the first two decades of the post-Mao period in part contributed to this high national burden of incurably advanced cancers convergent with an arsenal of increasingly sophisticated biochemical, radiographic, and genomic technologies for disease characterization, aggregated inside large medical centers. When this aggregated burden of diseases and technologies converges with globalized clinical trials, through concrete illnesses become fertile ground for producing new pharmacological targets. At its extreme, cancer evolution itself can be rendered a speculative machinery for drug production. This process can be described as the dialectical transformation from surplus disease to surplus health.

Reinterpreting Marx's analysis of capital in the context of pharmaceutical consumption in contemporary U.S., Dumit argues that late twentieth-century pharmaceutical industry is not oriented toward producing health so much as "surplus health." In developments that stretch back to the post-1950s period of therapeutic innovations, new drugs found lucrative markets when pre-disease states became treatable on the basis of risk mitigation even while the patient has no symptoms.[7] "Surplus" is constituted when risk mitigation at scale becomes totally abstracted

[7] By adjusting the risk thresholds of what constitutes a treatable pre-disease states that correlates with an acceptable level of future bad outcomes across populations, those who might never develop the disease nevertheless become valuable market shares, their surplus health exploited as surplus value. See Dumit (2012, 105-135) on risk thresholds and numbers-needed-to-treat

from experiences of disease treatment and symptom alleviation. This can be approximated as the numbers-needed-to-treat (NNT), which represents the number of people unnecessarily consuming a drug like the cholesterol-lowering Lipitor® just so one might avoid a "bad event" like a heart attack. For preventing truly deadly and debilitating conditions, the NNT is often in the 100s. Multiply this manifold to account for all mass-consumed drugs and we have a quantitative estimate of "surplus health" appropriated by pharmaceutical capital, analogous to industrial capital's appropriation of surplus value from the working day (Marx 1981, 341-416). So long as consumers do not object to the noxious "side-effects" of poly-pharmaceutical ingestion, the expropriation of surplus health can be expanded much as the working day can be stretched to the point of exhaustion.

While Dumit conceptualized surplus health as the product of targeting risk factors at the expense of concrete experiences of health or what he calls "healthiness," I use the term "surplus disease" to emphasize that specific segments of a population suffering from concrete sicknesses continue to be designated as possessing a treatable and potentially valuable symptoms. With few exceptions like CML, converting cancer into a chronic disease amenable to risk management does not operate solely on the basis of risk reduction. Clearly, late-stage cancer, among many other illnesses, is not an asymptomatic state. Targeted cancer drugs can and do improve symptoms of disease even while falling short of efficacy in terms of long-term remission and cure.[8] If surplus health depends on moving a threshold of risk determined by measuring

(NNT). See also Greene (2008) for a history of the debates that surrounded this therapeutic change within American biomedicine.

[8] See Sacher et al. (2014) and Johnson (2014) on the recent proliferation of lung cancer drugs in trial, from 32 in the 1980s to over 100 between 2001 and 2010. Assisting this proliferation is the "lowering of the bar" from overall survival (OS) to progression free survival (PFS). Where OS measures the duration from the point of assignment to an arm of the clinical trial until death, PFS

insensible biomarkers like blood pressure or cholesterol, surplus disease extracts a constellation of concrete symptoms and even new disease states into becoming the next treatment target.

Patients with advanced-stage cancers are at the forefront of converting symptoms to risk and vice-versa when they take targeted drugs in anticipation of drug resistance. Rather than targeting the Achilles heel of cancer, resistance-conferring mutations often arise from the chronic ingestion of precision therapies. Globalized clinical trials that produce targeted cancer drugs are shot through with the contradictions of surplus disease and surplus health. On the one hand, malignant tumors are substrates for testing the efficacy of new pharmaceutical molecules measured as the incremental prolongation of life. On the other, if lives are incrementally prolonged through precision therapies, those living must navigate through a changing and unpredictable set of symptoms. The production process of surplus health and surplus disease thus requires the continuous interconversion of qualities and quantities — a matter of inventing and defining quantifiable risk thresholds as well as generating emergent disease targets with which these thresholds correlate. As targetable mutations emerge on the heel of drug consumption, cancer clinical trial at their most potent could even transform cancer evolution into a speculative machinery anticipating its future treatment.[9]

---

puts the finishing line on a standard definition of disease progression (such as tumor growth) instead of death. A drug that increases PFS and thus delays disease progression, however construed, may not increase OS. Moreover, before the 1990s, Johnson (2014, 1389) notes that an insignificant survival benefit in length of life (OS) was interpreted as a negative result in spite of statistical significance. Thus, the median increase in length of survival interpreted as positive was a 3.9 month in the 1980s to just 0.9 month after 2000. But because PFS is almost always shorter than OS, tracking it is less time-intensive than tracking OS, making the trials also cheaper to run. On a historically related side note, HIV/AIDS activists championed the PFS as a metric of efficacy in the effort to get faster FDA approval on antiretroviral therapies (Epstein 1997).

[9] See Cooper (2012) on the speculative materialism of clinical trials dependent on "user generated data." In a related vein, see Nelson et al. (2014) on the flexibilization of clinical trials.

Attending to global circuits of pharmaceutical value that span different national markets for production and consumption, Sunder Rajan notes that experimental subjects in India who sell their "clinical labor" for cheap are constitutively excluded from therapeutic access, never getting to liquidate their surplus health as the consumers concentrated in the Global North (Sunder Rajan 2012, 342). In India, moreover, it is the state that, in service to market rationalities, protect a portion of citizens as consumers while constituting others as experimental subjects (Sunder Rajan 2005, 93-103). In China, inpatient enclosures have similarly been harnessed to produce surplus disease even as surplus health is accumulated in parallel. To assure the capture of surplus health, professional medical enclosures must also regularly collapse the difference between experimental subjects and consumers in the reproduction of surplus disease.

Drawing on a rival genealogy of experimentation, blind ingestion removes targeted cancer drugs from routine procedures of surveillance and circuits of surplus disease. Its practitioners mirror a regime of global clinical trials by refusing a separation between consumption and experimentation — risking the wild proliferation of unpredictable symptoms — while partaking in a mode of collective experimentation. Their risk-taking salvages experiences of ingesting targeted cancer drugs from globalized clinical trials and insert them into a field of collective practices inaugurated by Mao-era integrated medicine. In what follows, I trace the enduring salience of socialist norms of "experimenting with experience" that resist being appropriated as mere clinical labor.

Blind Ingestion in Practice

I learned a great deal more about procuring, preparing and ingesting targeted cancer drugs at the Hubei Provincial Hospital of Traditional Chinese Medicine (Provincial Hospital for short), the

largest Chinese medicine institution of Hubei province, than at University Hospital, even though the latter boasts a larger reputation as a cancer center and treats a higher volume of patients. The simple explanation for this discrepancy is that University Hospital usually requires patients to get genetic testing before initiating or switching between targeted cancer drugs. Officially, Director Yi of University Hospital's Oncology Department doesn't support patients taking gray market targeted cancer drugs, subscribing to a rule of "three don'ts": don't participate, don't recommend, don't support ("*bucanyu, butuijian, buzhichi*"). Still, ingestion a variety of prescribed and unprescribed gray-market cancer drugs was not uncommon among patients at University Hospital, and rank-and-file oncologists often turned a blind eye. But Director Liang Limin, the chair of the department of oncology at Provincial Hospital, had a markedly different policy.

I met Ms. Yuan and her daughter, Yinyin, while rounding with Dir. Liang on her ward. After greetings and some routine inquiries about Ms. Yuan's symptoms, Dir. Liang turned to Yinyin and told her about a patient we met earlier during rounds who had complained about developing resistance to the targeted cancer drug gefitinib, a first-generation EGFR TKI. "You have connections for 9291, right?" Dir. Liang asked, "Why don't you share them with her [the other patient]?" Yinyin immediately agreed. The connection came down to a coworker of Yinyin's engineer husband on long-term assignment in India.

I interviewed Ms. Yuan and her daughter later that day. Ms. Yuan was a retired textile worker in her early 60s. Yinyin, her gregarious daughter of mid-30s, was married to an engineer. Yinyin worked in online retail from home while looking after her mother and young daughter, and she proved to be an excellent historian of her mother's illness.

Two years ago, Ms. Yuan started feeling that her breathing became labored, so she and her daughter went to the outpatient clinic of a small community hospital. X-rays were taken that showed that her lungs had filled up with fluid. Each time her lungs were drained, they would refill. They headed for the oncology ward at University Hospital and was diagnosed with stage IV (metastatic) adenocarcinoma of the lung, a type of non-small cell lung cancer.

At University Hospital, a genetic test confirmed that Ms. Yuan carried the EGFR mutations targeted by the drugs Iressa, Tarceva and Conmana. The first two are American made and marketed; Conmana is licensed by a Chinese pharmaceutical company. All three costed 12-18,000 yuan (1800-2700 USD) a month at the time. The oncologist at University Hospital told them that the best way to acquire the drug was through a gift program negotiated with drug companies through the China Charity Federation. A gift program in name only, patients had to purchase 4-6 months of the drug at full price out-of-pocket, spending 70-80,000 yuan while showing evidence that their tumor shrank or stopped growing on radiographic scans before becoming eligible to receive the drug for free. Moreover, once the tumor begins to grow, free drug access is lost. Because resistance to targeted therapies for lung adenocarcinoma occurs 10-12 months on average after initiating therapy, from which point on the supply of free drugs stops, the "gift" is more accurately an investment account that pays a flexible annuity after a fixed period of accumulation. Too canny for this sort of gamble, Ms. Yuan and Yinyin left University Hospital to search for alternative avenues to acquire the drug.

In the days to weeks after her mother's discharge, Yinyin confirmed what she already suspected from speaking to other patients at University Hospital: targeted cancer drugs can be purchased abroad as generics or as APIs that cost even less from Chinese suppliers. Both presented logistical challenges. The former needed a reliable overseas network of suppliers to

source high quality generics to avoid toxic counterfeits. Getting the API required similar discernment as well as practical know-how with dosing and packing the powder into individual capsules. According to one report, APIs are often illicitly manufactured in state or commercial laboratories but also kitchen sink operations.[10] While dosing charts and drug processing equipment can be purchased online, a small mistake can have dire consequences. In the meantime, Ms. Yuan was deteriorating; "I felt like I was just lying around waiting to die," she recalled. With or without the drugs, some form of treatment would be necessary. The two set out for the outpatient oncology clinic at Provincial Hospital and found it overflowing with patients.

As the director of oncology at Provincial Hospital, Dir. Liang divides her time equally between inpatient and outpatient settings, spending two-and-a-half days every week in outpatient clinic in contrast to the half-day spent by Dir. Yi, her University Hospital counterpart. In clinic, Dr. Liang usually had one student assisting her. Within minutes of arrival, they were surrounded by patients spilling in from the corridors and waiting areas to congregate around their desks, listening, observing, commenting and waiting for their turn. A stack of history notebooks on Dir. Liang's desk grew when patients deposited their booklet in order of arrival and shrank when she took the topmost booklet to cue the next patient. She saw sixty to one hundred patients in one session.

The majority of encounters began around radiographic scans. Dir. Liang prioritized their interpretation for first-time visitors and for tracking tumor progression in 1-6 months intervals.

[10] I have not had the opportunity in my fieldwork to find out where APIs are manufactured, as this would pose many ethical and logistical dilemmas. According a *Southern Weekly* report, many of these drugs are synthesized in laboratories associated with private corporations or research academies, but not kitchen-sink operations cannot be excluded. API of mediocre purity are likely manufactured by pharmaceutical companies under the radar, and sell for about 500 RMB per gram. The price increases with perceived purity. See Yuan (2016).

She never mounted the scans on the CT viewbox next to her, but held them close to her nose while she squinted through her glasses to gauge whether the tumor had grown.[11] With or without scans, every encounter transitioned into a Chinese medicine phase including pulse palpation and prescription of a herbal formula. With three fingers on the wrist of the patient, Dr. Liang palpates the pulse in three positions at three different depths. The patient in the meantime is free to detail her afflictions in qualitative terms ranging from frequent dreams to chest tightness and yellow sputum coughed up in the mornings. Dir. Liang may give her interpretation right away or after jotting down a core pattern of symptoms in the history booklet opened in front of her, followed by a list of around twenty herbs and their doses. If the patient is returning from a three to fifteen-day trial period with a new formula, a handful of drugs would be added to or subtracted from the original formula according to the new pattern of symptoms that has emerged. If the patient feels worse off than before or if her condition has worsened on an old formula, an entirely new formula might be composed.

In this busy clinic, patients brought assorted questions that Dir. Liang rarely shirked from answering. I've seen her suggest the name of a specific surgeon in Sichuan province for a patient with otherwise inoperable late-stage esophageal cancer and give instructions on how to apply for supplemental health insurance for serious illness from the municipal insurance bureau. The

[11] Zhu Rui, her graduate student, told me that her teacher had an uncanny memory for the bright specks on dark CT films, recalling whether or not the tumor has changed even when patients forgot to bring their old scans, even though I've never seen Dir. Liang read the scans with Zhu Rui. Seeing over a hundred patients a day, I found it difficult to imagine being able to identify the same patient spaced two months apart, let alone recall the image of a tumor. I also never saw Dir. Liang describe the lesions on the scan in terms of numerical measurements or radiographic appearance. Dir. Yi, on the other hand, saw around twenty patients in his weekly half-day clinics, always mounted them on the CT viewbox for a thorough review of each lesion with his students, and had little patience for patients who did not bring their scans and diagnostic results. At both clinics, scans had the power to stand in for patients in the hands of their relatives. The aesthetics around the scans, however, were markedly different.

concern Yinyin brought to Dir. Liang was comparatively common. She told Dir. Liang about Ms. Yuan's condition and mentioned that she knew a way to acquire generic EGFR-TKI: a former classmate of her husband worked for a state-owned technology company and made frequent business trips to India. Dir. Liang not only confirmed that many of her patients were also smuggling generic targeted cancer drugs from India, encouraging Yinyin to proceed with her plans, but also told them to return to her clinic to monitor Ms. Yuan's response. Once Yinyin got the first batch of Geftinat, a generic form of Iressa (gefitinib), her mother took it for 28 days and went back for another CT scan and found that the tumor had halved in size.

Ms. Yuan took Geftinat for 18 months before she sensed encroaching drug resistance. When I asked her how she knew, she simply said, "I felt enervated [*mei jingshen*]." When Dir. Liang ordered blood tests of tumor markers — CEA, a molecule in the bloodstream that may correspond to the multiplication of cancer cells — it had indeed gone up. The standard approach at this point might be to continue taking the drug as long as the tumor does not rapidly enlarge on CT images. Instead, they discussed with Dir. Liang the unorthodox possibility that Ms. Yuan might respond to gefitinib afresh after switching to a different treatment regimen and switching back. Ms. Yuan went off gefitinib and Dir. Liang prescribed intravenous cisplatin, a conventional chemotherapy, but stopped after four rounds when Ms. Yuan lost her appetite. She then recommended an oral form of conventional chemotherapy called etoposide, another chemotherapy that nevertheless had to be purchased online because Provincial Hospital was out of stock.[12] Ms. Yuan refused to take it after 10 pills, recalling that nothing made her feel quite as

[12] A few of the most standard and inexpensive chemotherapeutic drugs were in short supply nationwide while I was doing fieldwork in part because the prices negotiated by provincial health bureaus were so low. Drug companies and hospital pharmacies are reluctant to produce and purchase them for lack of a profit margin. For a brief period while I was there, University Hospital was out of critical chemo drug vincristine. See Ni (2017).

awful. After about six weeks of experimenting with chemotherapy, Ms. Yuan went back to taking Geftinat for six more weeks, but her CEA level kept climbing. While she was on chemotherapy, Ms. Yuan stopped the herbal medicines that she had previously been taking; Yinyin noted that all kinds of problems developed as a result, including gallstones.

During this time, Yinyin began searching for a source of AZD9291, which she found from an online supplier with Indian sources. At this point, University Hospital oncologists usually suggest that patients undergo genetic testing again to confirm the presence of a specific drug-resistant mutation known as T790M. Instead, Ms. Yuan began ingesting generic 9291 *sans* genetic test two months before we met. Her tumor markers finally started to decline. She was hospitalized in March when our conversation took place because of liver problems that may still be related to the gallstones that formed when she was on chemotherapy. "So you see, we were spared of any detours [*meiyou zou wanlu*]," said Yinyin towards the end of our interview. I was surprised to hear that, having learned how convoluted their treatment course had been.

I describe Ms. Yuan's clinical course at some length because it typifies several ways in which integrated medicine facilitates blind ingestion. First, Chinese medical clinicians provide technical support, including oncological diagnostics and treatment, where Western medicine oncologists turn a blind eye. In addition, Dir. Liang's conversation with Yinyin and other patients in her clinic suggest that the Chinese medical oncology department provides an infrastructure for sharing experiences. Yinyin shared the source of her 9291 supplier; Dir. Liang shared Yinyin's experience with other patients; the family members of the deceased often shared unused drugs with Dir. Liang so other patients might acquire them at little to no charge. All kinds of information are gathered and channeled through Dir. Liang, particularly through the

outpatient clinic. In this setting, blind ingestion of generic and API drugs proceeded as experienced experimentation within a structure of mutual aid.

There is important historical precedence to the mutual aid and collective experimentation I found at Provincial Hospital. During the 1960s and 1970s as integrated medicine became the only form of medicine endorsed by the state, health care workers across all levels of state administration from village brigades to national laboratories partook in collective experimentation on different scales. Increasingly, their efforts are recognized as having contributed important breakthroughs to medical science. One of them is arsenic trioxide, the first targeted cancer drug that traces its origins to Chinese *materia medica*. Next, I provide a brief historical overview of Mao era mass science that produced arsenic trioxide, not to write a revisionist history of medical oncology to prioritize Chinese contributions, but to historicize the efficacy of targeted cancer drugs I found in contemporary Chinese clinics.

Re-networking Cancer Therapies through *Tu* and *Yang* Science

In the 1970s, arsenic trioxide was found to be efficacious in treating the deadly acute promyelocytic leukemia (APL) in a set of clinical experiments. Known in Chinese as *xionghuang*, *pishuang*, *pishi* and other cognates, arsenicals have been documented for use alone or in combination with other substances as drugs for toxic accumulations (*jiju* 积聚), among other conditions, in ancient Chinese pharmacopeia beginning with the the *Shennong bencao jing*.[13] The Ming Dynasty physician Li Shizhen indicates white arsenic as a treatment specifically

[13] The *Shennong bencao jing* is a classic treatise on medicines and herbs compiled around 200 CE that lists 365 herbs separated into three sections of upper, middle and lower quality with lower quality herbs being both more toxic and efficacious. See Obringer (2001, 203); Obringer

for “rotten flesh of boils” (*yongju* 痈疽) (Obringer 2001, 205), which modern Chinese medical oncology textbooks occasionally correlate with malignant tumors (Lin 2013, 3). White arsenic or arsenic trioxide’s specific use in APL surfaced in part thanks to a Mao-era ethos of mass science that paid attention to the experiential knowledge of Chinese medicine, especially of its grassroots practitioners. In recent years, Peking University neuroscientist Rao Yi, historian Li Runhong and sociologist Zhang Daqing published several articles helping to lift the story of how Zhang Tingdong learned about arsenic trioxide for leukemia treatment out of relative obscurity (Rao, Li & Zhang 2011; Rao, Li & Zhang 2013).

Zhang Tingdong, a doctor of integrated Chinese and Western medicine at Harbin Medical College, first learned about arsenic trioxide in 1971 from Han Taiyun, a pharmacologist colleague at the college, who in turn learned about it from a village doctor he met while participating in a mobile health team. Common across China from 1950s to the early 1980s, urban hospitals workers were sent on mobile health teams to aid village health stations and educate peasants on sanitation and hygiene for months to a few year at a time. On one such tour, Han Taiyun found that a village doctor used a formula containing arsenic trioxide (*pishuang*), calomel and toad skin to treat malignant tumors and tuberculosis to local acclaim (Rao, Li and Zhang 2013). Upon returning to Harbin, Han turned the recipe into an intramuscular injection, called it Ailing-1, and administered it to a number of patients. Zhang was later enlisted investigate the efficacy of the formula, testing its component parts or in combination with Chinese herbal medicines on patients with different types of leukemia over the next ten years.

(1997, 28-29) on the efficacy of arsenic and the general Chinese understanding of efficacy/toxicity embodied in double-edged *pharmakon*.

In the 1990s, Zhang Tingdong and his colleagues' work drew the attention of oncologists in Europe through the intermediary of Chen Zhu, a hematologist from Shanghai Jiaotong University doing graduate studies at the Saint-Louis Hospital in Paris in the 1980s.[14] Chen coordinated a meeting between his Parisian advisor Laurent Degos and his teacher in Shanghai, Wang Zhenyi, to study the effects of ATRA, a form of vitamin A manufactured only in China at the time, on acute leukemia. Zhang's work on arsenic trioxide introduced to the French hematologists when they later visited China.[15] Over the next decade, scientists in China, Europe, North America and Japan explicated the mechanism by which ATRA and arsenic trioxide synergistically target a chromosomal translocal mutation driving a subtype of APL.[16] Arsenic trioxide and ATRA count among the first targeted cancer drugs ever discovered, their clinical experiments predating even those of imatinib (Mukherjee 2010, 405-11).

Arsenic trioxide belongs to a small coterie of Chinese *materia medica* that has had their efficacy validated by experimental medical science. It also includes ephedrine derived from the root *mahuang,* febrifugine derived from herbal *changshan* and artemisinin derived from herbal *qinghao*. In each of these cases, extracting a mono-therapeutic compound from poly-

[14] Chen Zhu was among the first cohort of Chinese physicians to pursue training abroad in the post-Mao era. He studied with the French hematologist Laurent Degos. In Paris, he brought Wang Zhenyi, his former mentor from Shanghai Jiaotong University, into acquaintance with Degos in 1985, and the three launched a collaboration to test vitamin A analogs in patients with leukemia. He thus became a pivotal figure in a French-Chinese collaboration that showed that the division of malignant cells in a portion of patients with APL can be halted using ATRA. Chen Zhu's work on APL solidified his scientific credentials en route to becoming China's minister of health from 2007-2013. See Degos (2007) and Mukherjee (2010, 405-411).

[15] See Degos (2007) for a review of the history of ATRA and a description of his meeting with Zhang Tingdong.

[16] The aberrant fusion of two chromosomes in leukemic cells meant that RARα was next to a stretch of DNA known as the PML gene. The result of the decades long research effort at its most basic was elegant: ATRA worked synergistically with arsenic trioxide to induce degradation of the fusion product, acting on the RARα and PML respectively (Chen et al. 1996; Zhu et al. 2002).

pharmaceutic formulas formed an obligatory step. But as historian Sean Lei demonstrates in the case of *changshan*, extracting an active principle from Chinese poly-pharmacy is not just a technical step in experimental verification; it also re-networks a Chinese drug into the socio-technical network of science so a substance with known efficacy can be presented as a new discovery. Lei uses the term "re-network" in reference to the trials of strength to which actor-network theorists are acutely sensitive to, but with special attention to the historical field in which these boundary struggles emerge (Lei 1999, 324-327).[17] In the case of the 1930s discovery of *changshan* as a potent antimalarial in a set of experiments led by Western medicine doctors, re-networking effectively extricated *changshan* from the socio-technical network of Chinese medicine and inserted it within Western medicine's competing network.

In a detailed account of the actors and actants involved in the "discovery" of *changshan* that includes the pivotal role played by non-medical actors, Lei charts the intersection of science and politics that, in the idiom of the era, made *changshan* an exemplary case of scientizing Chinese medicine.[18] For much of the 20th century, integrative medical projects hinged on demonstrating that the explanatory power of Chinese medical theories and the efficacy of Chinese drugs could be corroborated using scientific methods. What scientizing practically meant varied greatly by time and place. In the case of *changshan*, a Western medicine doctor conducted a set of experiments that showed that a formula containing *changshan* given to him by

[17] Lei is careful to note that a major deficiency of Bruno Latour's (1988) actor-network approach is that these "fields" of historical relations, comparable to Bourdieu's notion of *doxa*, may be taken for granted by actors but invisible to actor-network theorists. In the present case, the historical field is the highly divisive struggle between Chinese medicine and Western medicine doctors in constituting the field of the state that preceded the re-networking of *changshan*.
[18] See Lei (2014) and Wang (1995) on the preeminence of science as a cultural force in early twentieth-century China and using science in its verb forms of scientize and scientization and personified as "Mr. Science." See Wei and Brock (2013) on the continued salience of Mr. Science in the Mao-era.

an administrative superior, who in turn learned about it in the context of a herbal formula listed in a local newspaper, cleared malaria-causing plasmodium parasites from fifty patients. Despite volumes of literary references to, and contemporaneous cases of, Chinese medicine physicians using *changshan* to treat symptoms of malaria, these clinical trials became the first step in "discovering" *changshan*. Paradoxically, this meant that the experience or *jingyan* of Chinese medicine practitioners relied on to select *changshan* as a promising research candidate in the first place had to be suppressed.

The dance to circumvent the experience of Chinese medicine came about in 1940, at a moment when Chinese medicine's future mode of existence was far from assured. The rhetorical significance of *jingyan* crystallized out of this contentious moment in the polemics of Yu Yan, a Western medicine doctor trained in Japan and influential proponent of abolishing Chinese medicine. The precise points of the debate are beyond the scope of this chapter, but Yu Yan crucially partitioned Chinese medicine into theories, drugs and experience (*jingyan*) (Lei 2002; Lei 2014, 69-96). This schematic enabled Yu to decouple drugs from the theoretical explanations proposed by the Chinese medicine practitioners deploying them. Experience emerged as an ambiguous middle term comparable to fundamentally unreliable instincts and intuitions. It was plausible that experience accidentally preserved the efficacy of Chinese drugs as Baconian facts submerged beneath the muddle of Chinese thought, Yu argued, but once these facts have been excavated by experimental means, the value of experience would be depleted.

Despite Yu Yan's derogation of *jingyan*, Chinese medicine doctor went on to embrace *jingyan* as a unique asset, arguing that the experience of Chinese medicine practitioners descends from thousands of years of human experimentation as opposed to more unreliable animal trials at

the root of Western physiological knowledge.[19] But the epistemic value of experience was vindicated only after a change in the political regime.

As Farquhar (1994b) argued in *Knowing Practice*, *jingyan* found its place of preeminence in post-1950 Chinese medicine in part because Mao himself posited social practice as the fount of knowledge, laid out in his influential essay, "On Practice." *Jingyan* was thus elevated from pre-theoretical instincts into a respectable epistemic resource, honed through the theoretical reflections mediating any form of creative labor (Farquhar 1994b; Zhan 2014, 250). After 1954, Chinese medicine practitioners were moreover allowed to enter the clinic in parallel with Western medicine, so the epistemic prestige of their experience found institutional conduits.

The epistemic and political import of practice informed not only state policy on science and medicine, but a whole host of movements that sought to elevate the experience of the Chinese masses in parallel and sometimes superior to the expertise of elite and often foreign-educated scientists. During the Cultural Revolution, integrated medicine came into peak political style because it enacted a real possibility of "bottom-up" mass science. If integration still retained early-twentieth century emphases on scientizing, sometimes at the expense of the wholesale destruction of traditional styles of practice (see Introduction), the meaning and relevance of scientific methods had also become contestable.

[19] This only led Western medicine doctors to shift the arena of debate to ethical grounds and accuse Chinese medicine of cruelty. Nevertheless, under the Republican regime, *jingyan* became the basis to promote Chinese medicine as a promising area of research insofar as the experience of traditional practitioners can inform how scientizing ought to be conducted. It is perhaps fair to say that cleaving *jingyan* from Chinese medical theory was a concession Chinese medicine practitioners made in order to carve out a foothold within a hostile program of political reform. The genuine hybridity of *jingyan* therefore comes across in the paradox of Western medicine doctors announcing that they've discovered a new drug while acknowledging that they have not made any contributions to advancing knowledge of its clinical efficacy (Lei 2002, 348-350).

Anonymous participation in collective experimentation is a key component that set mass science apart from expert-led experimentation. For her contribution to the discovery of the antimalarial artemisinin from herbal *qinghao*, Tu Youyou, a young scientist at the Research Academy of Chinese Medicine in the early 1970s, was awarded the Nobel Prize in Physiology in 2015. But in 1978, at the first national-level meeting for taking stock of *qinghao* research, six out of over twenty institutions involved in the military-backed Project 523 were collectively recognized in a national award conferred for their contributions. The recipients were listed in order from the Research Academy of Chinese Medicine (where Tu Youyou was employed) to the Gaoyou County Department of Health in Jiangsu province. Starting in 1958, twelve years before Tu made showed that an ether extract made out of *qinghao* was effective in clearing mice-borne malaria, Gaoyou County had organized local brigades to grow *qinghao* for malaria prevention, scaling up to *en masse* ingestion and population-wide observational studies in 1969.[20] The scientists who worked in the laboratory were thus listed alongside village health workers who organized *qinghao* cultivation and ingestion.

Village health workers and ordinary peasants who participated in mass science were more than readily available experimental subjects outside the walls of elite laboratories. In the systematic incorporation of *tufang* or "local recipes" and Chinese herbal regimens into experimental protocols, the experience of the Chinese masses was implicated for the initial identification of the efficacious substance as well as in altering trial design. When the initial batch of *qinghao* derivatives made from Beijing varieties of the plant were found as less-than-stellar at clearing malaria in patients, experimentalists in Yunnan used local varieties of *qinghao*

[20] The significance of Gaoyou County's contribution is transmitted even in the choice of location for the 1978 award meeting – Yangzhou, the capital city of Jiangsu province, rather than Beijing. See also Fu (2017, 133) and Zhang (2005, 15, 50).

superior in efficacy (Zhang 2006, 22-40). After preliminary validation of the potency of Ailing-1 on six patients in 1973, Zhang Tingdong and Rong Fuxiang treated 55 patients with acute leukemia over the next five years. All but three received both Ailing-1 and Chinese herbal medicines prescribed according to an evolving pattern of illness. In their 1979 paper, they report that 70 percent of patients experienced full or partial remission of their conditions, suggesting that a future treatment protocol using integrated medicine may be superior to either Chinese medical pattern differentiation and Western medical chemotherapy alone (Zhang and Rong 1979, 8).

In a statewide effort to make science "of the masses and for the masses," Chinese citizens of all classes were brought into the fold of scientific endeavors, the significance of their embodied knowledge magnified on a global political stage.[21] In her study on agricultural science during the radical years of the Mao era, historian Sigrid Schmalzer calls for using a *tu*/*yang* binary widely used in the governing ideology of the communist party to parse the contradictions and commitments of mass science discourses. *Tu*, a character that denotes "earth," conjures a cluster of meanings associated with the native, Chinese, local, and rustic. In contrast, *yang*, the character for "ocean," suggests all things foreign, Western, elite and professional. While official policy called for integrating *tu* and *yang* in scientific pursuits, propaganda in the 1960s and

[21] See Fan (2012) for the mobilization of the embodied senses of the masses in earthquake detection as a form of producing knowledge in seismology, with implications for national defense. See Schmalzer (2016, 27-46) on the "point-to-plane" relationship between local experience and experiment extended to other regions of the country as a "model" to be emulated found. A similar principle went into organizing qinghao research, as articulated in the following passage composed by former party cadres of Project 523: "*Qinghao* became a focal point of research only after a long period of comparison with *changshan*, *yingzhao* and other herbs. When we delved into the focal points, we had to be attentive to relations between "points" and "planes," encouraging new, promising ideas to germinate while excavating new focal points (Zhang 2006, 130; author's translation). See also Hsu (2015) on the circulation of artemisinin antimalarials in Africa as a continuation of the multiplicity of qinghao and artemisinin as objects.

1970s often openly valorized *tu* over *yang* in casting the masses as prime movers in producing scientific knowledge. As tension escalated with the Soviet Union, *tu* science reinforced the importance of national self-reliance while *yang* expertise evoked suspicion towards global power imbalances that has historically paired science with the spread of colonialism (Schmalzer 2016, 34-38). Beyond passing ideological fashions, the *tu/yang* binary lends critical insights to how people in Mao-era China understood scientific knowledge as made in transit from one group of people to another.

While the *tu*/*yang* binary is rarely referenced in scientific work today, it readily maps onto other binaries that are still relevant, notably Chinese/Western in medicine. Indeed, in the post-Mao era, re-networking efficacious Chinese drugs through experimentation has increasingly spun out of the orbit of collective embodied experience. Although I hasten to add that contemporary clinical and ethnographic evidence strongly suggests that drugs invented in the laboratory cannot in general be efficacious independent of experiential knowledge, *pace* Yu Yan. A vast percentage of designer molecules fail to perform as expected in human trials. *Tu* collective experience, insofar as it informs which drugs are ingested and combined, continues to be interspersed in the conduct of *yang* clinical trials.

One way to demonstrate this is to steer away from rare examples of Chinese drugs re-networked as modern pharmaceuticals to instead focus on how targeted cancer drugs licensed by Euro-American pharmaceutical industries manifest efficacy outside the networks of "*yang*" medical science. It bears underscoring that Yinyin and Ms. Yuan's encounter with Dir. Liang was premised on a refusal. They turned down the drug gifting program at University Hospital. Yinyin recalled how she bristled when an oncologist at University Hospital suggested that Tarceva, the most expensive EGFR TKI licensed by the American pharmaceutical company

Genentech, might cost too much for them even through the drug gifting program. Rather than arising solely as a strategy of desperation, blind ingestion responds to the question of who controls access to drugs and has the power to prescribe their uses.

Managing Risk, Maximizing Efficacy

In 2017, the global pharmaceutical industry is a trillion-dollar enterprise with over 19 billion generated on the sales of 138 types of cancer drugs in China alone (Wang and Tian 2018). As China grows as a consumer market for an industry with capital concentration in Europe, Japan and the U.S., so does the number of Chinese patients enrolled in clinical trials (Cooper 2011). Experimental subjectivity in China has to be understood in the context of a high burden of advanced-stage cancers considerably rarer in North America and Europe, but which provides enormous opportunities for pharmaceutical capital to open up new biological targets and consumer markets in China and beyond.[22] If the inclusion of Chinese patients has the potential to increase the productivity of cancer drug development, this would not be possible without an infrastructure of risk management aggregated inside Chinese hospitals including a suite of biochemical, radiographic, and genomic sequencing technologies to characterize standardized treatment targets. Whether it's the dimensions of a tumor that shrinks and expands over time or the fluctuations of a tumor-specific biomarker, quantifying these metrics repeatedly on a cohort of patients is critical for standardizing efficacy. In light of global circuits of pharmaceutical production, the interconversion of risk management and efficacy maximization moreover has to

[22] A major piece of this framework is convergence of the post-genomic history of oncology and the statistical turn to evidence-based medicine in Euro-American clinical practice with worldwide reach in the form of standard protocols for classifying cancer and running clinical trials. See Marks (1997) and Keating and Cambrosio (2003). See Waldby and Salter (2011) on China's growing role as a biopolitical state-corporate powerhouse.

be understood as a dialectical rather than a straightforwardly correlative process. How specific tumor-drug interactions are recorded as evidence for the drug's efficacy entail layers of abstraction dialectically shaping practices drug ingestion.

Sunder Rajan described experimental subjectivity of Indian patients as "merely risked" when they are systemically barred from therapeutic consumption, who derives therapy from clinical trials only incidentally (Sunder Rajan 2007; 2012). In contrast, drug consumers in wealthier classes and countries bear a proportionately smaller risk (as "side-effect") for the opportunity to liquidate the aforementioned risk into health in the abstract (including surplus health). But the accumulation and offset of risk permeates the entire circuit of pharmaceutical value from experimental subjects and consumers to the managers of capital. Publicly-traded drug companies are increasingly evaluated by investors on metrics of growth (increase in rate of profit) rather than profit itself. Yet, drug candidates that have their efficacy evaluated against the stringent statistical criteria of the randomized clinical trial have a high rate of failure, with only about one in five making it to market. This creates what Sunder Rajan calls an "innovation deficit" (Sunder Rajan 2012, 322-323). For patients and experimental subjects alike, this means that their illnesses can have disparate, even competing values in the circuits of drug development on the one hand and consumption on the other.

In cancer clinical trials, risks of side-effects but especially encroaching drug resistance must be managed to elicit evidence of efficacy against a temporality of diminishing returns: the more advanced the disease, the less likely any drug will be efficacious. Demonstrating efficacy against these odds not only produces metrics of risk reduction, but potentially defines new drug targets. New drugs are validated through converting quantitative risk reduction to a qualitative change in the therapeutic standard. Because logics and practices of risk reduction produce novel

disease targets, value flows from surplus health to surplus disease in the circuit of drug production. On the other hand, defining new drug targets is tantamount to carving out new drug markets for pharmaceutical capital, offsetting risk in the investment portfolio of drug companies. As new drug markets emerge, more and more surplus disease can be converted into surplus health in the circuit of drug consumption. While the two circuits are more tightly wound together than ever in China, such that the same patient may crisscross both multiple times over the course of seeking treatment, the latter takes historical priority: surplus disease preceded surplus health. The success of gefitinib, the first EGFR TKI for lung cancer to enter the Chinese market, is an illustrative watershed.

In 2017, renowned Chinese oncologist Wu Yilong co-authored a paper in the *Journal of Hematology and Oncology*, reviewing the field of opportunities in the cancer therapeutics in China. He catalogued 30 ongoing clinical trials in the class of small molecule TKIs, of which 24 are run by Chinese groups with domestic funding (for comparison, there are 28 trials listed in clinicaltrials.gov for the same class of drugs in the U.S. as of February 2018) (Su and Wu 2017). Wu is the principal investigator for eight of these trials. A self-styled "doctor-vigilante" (*yixia*) who introduced gefitinib, the first EGFR TKI to Chinese patients with lung cancer, Wu Yilong might have felt vindicated (Zou 2018).

Wu first learned about the drug gefitinib on a plane ride back from an international conference in 2000. Gefitinib (also known by its brand-name, Iressa), entered phase 2 clinical trial in 1998, enrolling two hundred patients with non-small cell lung cancer from the U.S. and Japan.[23] Nearly 40 percent of patients reported improvement within days of ingesting the drug

[23] Clinical trials range from phases 0-4, but usually starts at phase 1, which involves testing on healthy volunteers or patients with cancer (usually less than 100 participants) to assess safety of

and the tumors shrank on the CT scans of 28 percent of Japanese and 10 percent of American patients (Johnson and Arteaga 2003, 2227; Pao et al. 2004). Based on this striking response on imaging, the U.S. Food and Drug Administration (FDA) accelerated the approval of gefitinib in 2003 pending results from more stringent phase 3 trials on larger samples (Pollack 2003). Not one of the drug's phase 2 trial sites was located in China, but Wu applied for an extended access program (EAP) from AstraZeneca to acquire the drug as a charitable donation. His application was approved, but there remained the problem of Chinese regulatory authorities considering the importation of any drug not approved for the Chinese market as illicit. Against his colleague's disapprobation, Wu exploited a loophole that permitted foreign drugs to cross Chinese customs for non-commercial life-saving purposes, circumventing Ministry of Health regulations before gefitinib was approved for the Chinese market in 2005 (Xue et al. 2005). From 2001-2007, over a thousand Chinese patients took gefitinib under the EAP (Huang 2015).

Defying expectations, three subsequent phase 3 clinical trials failed to show that gefitinib was more effective than conventional chemo or even placebo in extending the survival of patients with relapsed lung cancer.[24] In the aftermath of these more statistically rigorous trials, the U.S. consumer protection organization Public Citizen petitioned the FDA to withdraw gefitinib from the U.S. market. In any case, the Silicon Valley pharmaceutical company Genentech had come up with erlotinib (Tarceva), a rival EGFR TKI, that conferred a modest 2-

---

the therapeutic dose. Efficacy is not directly assessed until phases 2 and 3. Phase 2 trials enroll hundreds of patients and phase 3 enroll thousands. Positive phase 3 trial results are usually needed for FDA approval. Phase 4 trials are what's called post-marketing surveillance for monitoring long term adverse reactions (USFDA 2018).

[24] The three trials were ISEL, INTACT I/II and INTEREST (Pao and Chmielecki 2010, 763). See especially Thatcher et al. 2005 which showed the gefitinib was no better than placebo as second or third-line treatment in extending survival for NSCLC patients.

months survival benefit (Shepherd et al. 2005). The FDA withdrew its approval for Iressa in 2005.

Wu reacted to these developments with skepticism. He took to the Chinese *Journal of Evidence-Based Medicine* he helped found in 2001 to attribute gefitinib's failure on the genetic variation of different human populations (Wu 2004). Wu reasoned that gefitinib and erlotinib trials analyzed patients' response to treatment with respect to the quantity of EGFR expressed on their tumor cells. Less than 24 percent of patients from seven separate phase 2 and phase 3 trials had volunteered biopsy specimen that could be tested for mutations, and less than 5 percent of these expressed the sensitizing mutations (Pao and Chmielecki 2010, 764). This was too small a subset to draw statistically meaningful conclusions. Yet, Wu was convinced that if a large genomic database was constructed to analyze the over 40,000 patients treated under the Iressa EAP worldwide, there would be sufficient statistical power to bring out a correlation between mutation status and drug efficacy (Wu 2004, 68). Even as his confidence flies in the face of statistical evidence, Wu declared that oncology is upon a "profoundly revolutionary moment in the treatment of lung cancer."

Wu Yilong soon had an opportunity to test his theory. Shortly before Wu's article appeared, Harvard University researchers sequenced the EGFR gene in biopsy specimen from Japanese and American patients and found two somatic mutations that correlated with radiographic evidence of tumor shrinkage for patients taking the TKIs, although their tumors eventually all grew back (Paez et al. 2004; Lynch et al. 2004; Pao et al. 2004). Wu noted that these studies found that the relevant mutations seem to appear in more women (9/45 or 20 percent) than men (7/74 or 9 percent) and in more Japanese (15/58 or 26%) than Americans (1/61 or 2%) (Wu 2004, 67-8; Paez et al. 2004). These results suggest that drug response might

correlate with ethnic, gender and mutation statuses. Ethnicity and gender alone were insufficiently precise for defining a target population. Public Citizen cited the lack of an effective predictive test for identifying the subgroup of patients who might benefit from Iressa as one reason for its removal.[25] Fortunately for AstraZeneca, when gefitinib was withdrawn from U.S. and European markets, it was still approved for use in East Asia. It proceeded to fund oncologists in Asia to put Iressa through yet another phase 3 trial. Unlike the three preceding phase 3 trials for gefitinib, the IPASS (Iressa Pan-Asian Study) enrolled over 1200 patients, half of whom were from China. Wu Yilong became one of five Chinese oncologists on the ten-member steering committee for IPASS.

IPASS is considered a landmark cancer clinical trial not only because it suggested that in the right patient group, gefitinib curbed tumor growth for 25 percent of patients compared to 7 percent of patients receiving conventional chemotherapy (Mok et al. 2009). Among the nearly 500 patients who died in the two years of running the trial, 223 were on gefitinib compared with 227 on chemotherapy. By this metric alone, IPASS might confirm previous null trials suggesting that gefitinib is no better than chemotherapy. However, unlike previous trials, IPASS pre-selected patients based on characteristics found among likely responders: female gender, Asian ethnicity, never having smoked in the past.[26] More importantly, many more tissue samples were

[25] The petition by Barbehenn, Lurie and Wolf (2005) to the acting commissioner of the Center for Drug Evaluation and Research of the FDA wrote: "There is a growing interest in identifying the 10% of patients who benefit from Iressa in terms of tumor size. Recent experiments have provided evidence that some patients have a change (mutation) in their DNA such that Iressa binds more tightly to EGFR than in patients without mutations. However, these were post-hoc results from a small subset of patients; patients have never been tested prospectively and the positive predictive of a test for mutations has not been calculated."

[26] See Mok et al. (2009, 955), Pao et al. (2004) and Kobayashi et al. (2005). While lung cancer disproportionately affects men who smoke, 80 percent of patients enrolled in IPASS were women and 94 percent never smoked.

collected — 56 percent as opposed to 24 percent previously — with around 90 percent or almost two hundred testing positive for the two presumably drug-sensitizing mutations. Those in the gefitinib arm of the trial who had a mutated copy of the EGFR gene had about a fourfold higher chance of remission after one year than the same demographic in the chemotherapy arm. [27] IPASS thus helped validate a method for classifying patients according to mutation status and, by extension, designating who and what was being targeted by the drug in the first place. In 2015, the FDA reinstated its approval for gefitinib, citing the availability of a diagnostic test that specified its target population via genetic mutation (Simon 2015).

From approval to market withdrawal to the reversal of its withdrawal, gefitinib has proved exceptional. Most drugs fail to make it to market even after repeated trials. Broadening the historical aperture, researchers, executives and social scientists have all noticed that the exacting metrics of the randomized-controlled trial (RCT), a "gold-standard" test developed in the 1950s when regulatory limits had to be placed on a seemingly endless bounty of active molecules entering the drug market, are in part to blame for the current innovation deficit (Marks 1997, 139; Nelson et al. 2014, 75). To compensate, clinical trials that pre-select their trial population and employ flexible designs are being increasingly favored.

Surveying several multi-centered cancer clinical trials, Nelson and her coauthors propose that it is no longer adequate to think of the RCT only as a highly regularized testing device. In cancer drug trials in particular, the RCT has been leveraged into an "experimental system" which, according to the philosopher Hans-Jörg Rheinberger who coined the term, acts as "a

[27] Among patients who had a mutated copy of the EGFR gene, those who received gefitinib had about a fourfold chance of not progressing on the drug by the 1-year mark than those who received chemotherapy. The reverse was true for those without the mutations — receiving chemotherapy instead of gefitinib seemed to delay disease progression — even if the difference remains slim in terms of overall survival (See Appendix 1, Figure 5).

generator of surprises" (Rheinberger 1997, 3 cited in Nelson et al. 2017, 77). This transformation "[links] measurable biological characteristics, such as gene expression or genetic mutations, to clinical features, such as a patient's intrinsic potential for response to a particular drug" (Nelson et al. 2017, 75). IPASS was one of the first cancer clinical trials to not only test a drug, but also hone an experimental machinery or "platform" that define the features of the drug's target on the basis on population genetics, thus validating it as a drug.[28] If this logic seems circular, rendering the outcome of the experiment essentially slippery is a core feature of experimental systems. This is not to deny the reality of the efficacy of targeted cancer drugs; it is to say that efficacy is realized within experimental systems "'more real'…than ordinary reality" (Rheinberger 1997, 145-146; Cooper and Waldby 2014, 196).

What is promulgated as "flexible design" in practice requires more intensive and often invasive collection of blood and tissue samples.[29] Nelson and coauthors describe protocols emended mid-trial so more tissue samples can be collected from patients to yield larger and more varied datasets (Nelson et al. 2017). In Chinese hospitals, where physicians are vigilant to collect as much blood and tissue samples as possible even for patients not enrolled in clinical trials, a medicine of risk management can easily bleed into an experiment for efficacy maximization. For the oncologists, biomarker data collected today, even data inadmissible to a clinical trial, can help design future trial protocols (Cooper and Waldby 2014, 161-172). For patients who often

[28] See Keating and Cambrosio (2003) on "biomedical platforms" means and materials of mutual intelligibility organizing a range of clinical and experimental practices in oncology. Their example was the platform of cell immunophenotyping, but the array of methods for genetic testing could be studied as analogous examples.

[29] The gold standard of characterizing the mechanism of tumor resistance is tissue biopsy of patients before and after disease relapse. Given the procedural challenges and costs that frequent biopsies pose, oncologists recognize the need for proxy models or less invasive forms of biopsies such as blood draws to check for circulating DNA (cDNA), what's called liquid biopsy (Garraway and Jänne 2012; Jamal-Hanjani et al. 2017).

pay for the procedures that collect their blood and tissue samples, the chances that any new treatment will be approved in their lifetime is effectively nonexistent. More dangerously, all patients — even those who are not enrolled in clinical trials — face foreclosure to therapeutic access in the form of drug resistance.

Targeted cancer drugs are not silver bullets against cancer, and risk management is a far cry from disease eradication. In the case of lung adenocarcinomas, the EGFR TKIs gefitinib, erlotinib and icotinib stop sequestering tumor growth in patients even with the right mutations within a year on average. Drug-sensitizing mutations are not switches that turn tumor growth on or off; a few years after the IPASS trial, a large retrospective study suggested that the sensitizing EGFR mutations may also be associated with less aggressive tumor phenotypes (Johnson et al. 2013). Yet, mutations that appear in the aftermath of consuming cancer drugs are turned into targets for next-generation precision therapies.

Insofar as efficacy in risk management is the utility derived from consuming targeted drugs, the desired outcome is tumor shrinkage indexing health in the abstract. At the same time, a bundle of concrete symptoms are continuously managed alongside the temporary deferral of disease progression. In theory, risk management occurs outside of trial settings, in which patients pay to ingest approved drugs. However, if we understand risk management as the dialectical process of surplus health becoming surplus disease (the inverse of drug development circuit outlined above), it enters a new cycle of efficacy maximization as patients approaches the horizon of drug resistance.[30]

[30] Synthesis in this sense involves spatiotemporal contiguity across an infrastructure even while differences in practices are preserved. See Introduction.

Multiple second and third generation TKIs entered clinical trial on the heels of erlotinib and gefitinib to target secondary mutations in the EGFR genes found in patients who develop resistance to first generation TKIs (Pao and Chmielecki 2010, 762). Tagrisso (osimertinib), a third generation EGFR TKI widely known in China as AZD 9291, targets an amino acid substitution mutation known as T790M on the EGFR gene and was approved by the FDA less than three years after the first patient was dosed (Yver 2016, 1166). On average, Tagrisso stops being effective in about 8 months (Oxnard et al. 2018). In true wack-a-mole fashion, fourth-generation EGFR TKIs targeting resistance mutations to Tagrisso are now in development.[31]

The rapid emergence of resistance mutations after TKI exposure has to be understood in the context of the genomic heterogeneity of late-stage solid tumors. Advanced-stage cancers of solid organs contain multiple subclones with interclonal and intraclonal variation. In the years it takes for a single neoplastic cell to multiply to the point of becoming a symptomatic tumor, selective pressures in the complex microenvironment of its proliferation produce diverse phylogenies. Routine biopsies do not capture this heterogeneity. The phylogenetic relationship between subclones and therapeutic interventions as selective evolutionary events thus remain largely unmapped.[32] The contradiction of treating a terminal illness like advanced-stage cancer as a chronic condition, whereby treating the disease produces more targets for treatment, can again be understood in terms of the dialectics of surplus disease and surplus health.

[31] See Wang, Song & Liu (2017) on trials for EAI045, a drug that targets C797S resistance associated with T790M resistance. The phenomenon of breaking up a common disease into several sub-classes to re-classify it as an orphan disease and hence, subject to more aggressive patent protection under U.S. laws, is commonly referred to as "salami-slicing."
[32] See also the ongoing TracerX trial that attempts to map lung cancer phylogenies (Jamal-Hanjani et al. 2017).

For individual patients, embodied disease states might still be exchanged for concrete measures and experiences of health post-resistance if they convert their condition once again to surplus disease. But surplus disease has fluctuating value vis-à-vis the arcane inclusion and exclusion criteria of clinical trials, as shown in this next case.

University Hospital became a recruitment site for a phase 3 trial comparing the efficacy of osimertinib (known by its experimental name of AZD9291 and brand-name Tagrisso) and gefitinib months before my arrival. It was clear by then that osimertinib would soon to be approved for the Chinese market. This was a highly desirable trial to enroll in not only because the drug is dispensed gratis, but also because osimertinib targeted a mutation that affects a sizable number of patients who have developed resistance to first-generation TKIs like gefitinib.

During Dir. Yi's weekly outpatient clinic, Mr. Yu Zongxi a 65 year-old retiree known to Dir. Yi, came in to request enrollment. Mr. Yu began taking erlotinib, a first-generation targeted cancer drug, through the drug gifting program when he was first diagnosed with advanced-stage lung cancer. Seventeen months later, his cancer began growing again. After chemo and radiation treatment received at University Hospital, Mr. Yu started taking AZD9291 sold online as an API powder with Dir. Yi's knowledge starting back in 2014. Treatment costs ate into Mr. Yu's savings, while he suffered from a compromised immune system and diarrhea. Enrollment in the clinical trial might alleviate both financial woes and fears that the counterfeit was more toxic. In response to his request, Dir. Yi reminded Mr. Yu that he knowingly forfeited future opportunities to enroll in any clinical trial or drug-assistance programs when he ingested the API. Mr. Yu begged and begged, but Dir. Yi remained unmoved, stating that the central laboratory in Shanghai to which they submitted samples could not be negotiated with. The two wrangled verbally for thirty minutes before Mr. Yu left, visibly distressed.

Barring patients from clinical trials once they've ingested the counterfeit drugs stems from the rationale that the drug's efficacy measured as length of time until the next pathological event (i.e. tumor growth on radiographic scan) may be artificially shortened if the drug candidate had interacted with the specific tumor for a period longer than can be surveilled. Now that intensive biopsies and genomic testing has become *de rigeur* both in everyday clinical and experimental contexts, past experiences of risk management can be evaluated as compromising the efficacy of a drug a posteriori. The contradiction that the patient face is between present efficacy and future foreclosure. The precarious labor of exchanging one's biopsy samples and genomic profiles for drugs usually results in the conversion of surplus disease in service of producing surplus health few lives long enough to access.

Historically, blind ingestion helped inaugurate the experimental apparatus of Chinese oncology when Wu Yilong facilitated thousands of Chinese patients to ingest gefitinib when the drug target was unknown and while evidence of efficacy was lacking.[33] Symbiotic with a disciplinary infrastructure of inpatient oncology that made risk stratification routine in cancer treatment, blind ingestion opened up Chinese bodies and markets to new classes of targeted cancer therapies. But against a horizon of resistance deterrence, the inevitable depletion of surplus health which enables the continued ingestion of a single drug to stave off cancer progression sooner or later bleeds into surplus disease with the onset of resistance. From that point onward, surplus disease make a potentially riskier gamble through blind ingestion as a mode of salvage therapy. Maximizing efficacy comes down to the control over timing, be it in switching drugs or between logics of drug ingestion.

[33] Wu Yilong is known in the Chinese media as *yixia*, or "doctor vigilante," a moniker that he has gladly accepted. Similarly, Lu Yong, who continues to import generic targeted cancer drugs from India, goes by the monikar *yaoxia* or "drug vigilante."

Salvaging Experience

"Blind ingestion" in practice is never completely blind insofar as it is sometimes guided by partial knowledge of mutation status (as in Ms. Yuan's case) and even more often corroborated by diagnostic scans and lab tests (as in Mr. Chu's case from Chapter 2). It is thus more useful to define blindness relative to a technical and normative standard of surveillance. The drug gift program funded by the Chinese Charity Federation, for example, requires patients to submit radiographic scans approximately every three months. Clinical trials prescribe an even stricter set of protocols for submitting blood tests and tissue samples to remain in the trial. Blind ingestion evolved as the inverse to a highly surveilled mode of ingesting targeted therapies. While it relies on the techniques of risk management, instead of relying on the efficacy of a single drug and waiting until resistance develops to convert surplus disease into new drug targets, blind ingestion accommodates existing therapies by taking them in highly particular combinations in hopes of producing favorable outcomes. The routine practice of ingesting a combination of targeted cancer drugs relies on what I'm calling "experience salvage" that, uncoincidentally, resembles socialist-era mass science.

"Salvage therapy" is an oncological term for treatments of last resort administered when standard therapies have failed the patient. Sooner or later, as existing therapies can no longer contain tumor growth, oncologists will present the possibility of "salvage" using non-standard but also largely ineffective treatments as a last-ditch effort. I re-inscribe the term "salvage" along with the practice of blind ingestion by taking a cue from Anna Tsing's description of the pericapitalist dynamics of "salvage accumulation" operating across global supply chains for matsutake mushrooms (Tsing 2015, 63-6). A saprophyte that crops up in forests and woodlands that have suffered environmental degradation, the *matsutake* mushroom is also a luxury

consumer good. Its supply chain is stocked by people traversing disturbed landscapes from Oregon to Yunnan, each relying on their differential historical experiences and embodied sensibilities. Analogously, mutations that arise during pathological events of cancer metastasis spurs the emergence of surplus disease when funneled through the global experimental systems to produce the next generation of targeted therapies. Unpacking cancer treatment as a complex value chain, I finally return to Yinyin and Ms. Yuan to take stock of blind ingestion as a pericapitalist mode of experimentation on the margins of the global experimental system. I describe this mode of experimentation as "salvaging experience," for it both contributes to a collective project of conserving and maximizing efficacy even while it arguably speeds up the emergence of surplus disease. Nevertheless, earthy (*tu*) experiences of drug ingestion temporarily reroute the global traffic of tissue samples, genetic data, experimental subjects and next-generation pharmaceuticals.

***

When Yinyin first started researching targeted therapies for her mother online, she came across rich troves of experiences composed and collated by fellow patients on internet forums. On the forum *Dances with Cancer* (DWC), experimental cancer drugs were often referred to by their clinical trial codenames: 9291 for osimertinib, 2992 for afatinib, 299804 for dacotinib etc. The most widely-read posts were hyperdense summaries of recent oncological literatures paired with recipes and guidelines for how targeted therapies should be consumed. Patients and their kin upload detailed spreadsheets of their treatment courses replete with the results of diagnostic exams and accounts of symptoms pre- and post-treatment. Out of this forum, dubbed the "hub of

grassroots cancer treatment," emerged theories of efficacy that evince a sophisticated appreciation of the biochemistry of targeted cancer drugs while presuming blind ingestion.

A long-time contributor to the forum who posted under the name "Bean Spirit" (Handou Jingshen) with the avatar of the British comedian known as Mr. Bean was a pioneer in sourcing gary-market targeted cancer drugs and APIs. Bean Spirit was diagnosed with advanced-stage lung cancer in 2008 shortly after being treated for liver cancer. He became an online legend in particular for devising a "Four Step Method" (*sibu fa*) for lung cancer treatment that cycled through different targeted cancer drugs to offset drug resistance [see Diagram 1]. After his death in early 2017, nine years after being diagnosed with stage III lung cancer, an obituary on DWC praised him for "using his carnal body to taste-test different drugs, recording his sensations, effects and adverse reactions for all to see." This spurred comparison to *Shennong*, the legendary sage who tested the effects of hundreds of herbs to collate the *Shennong bencao jing* or *Classic of Herbal Medicines*, to which all subsequent pharmacological treatises in Chinese medicine trace descent. Bean Spirit is not the only consummate self-experimenter to earn the epithet of the mystical founder of Chinese pharmacology. So did "Xiao P," a young man diagnosed with liver cancer at 24 years of age and tried over 20 different novel therapies, carefully documenting his response and biomarker levels and sharing them on DWC for five years until he passed away in 2016 (Chen 2019). Their methods of ingesting drugs in combination and sharing their experiences point to traditional medicine as inspiration and mass science as mode of experimentation, exemplified in particular by Bean Spirit's Four Step Method.

Noting that Iressa and Tarceva target EGFR mutations, Bean Spirit advises regularly rotating through different targeted cancer drugs regardless of one's mutation status based on the simple observation that one did not need to test positive for a genetic mutation to respond to

targeted therapies. The Four Step Method provides a roadmap for rotating through four classes of targeted cancer drugs, each more promiscuous about its "target" than the last, as opposed to taking the one drug indicated by one's mutation status until resistance invariably sets in. The detailed posts over which he outlined the method is complete with drug doses, contraindications and common adverse reactions. While Bean Spirit states that it is not necessary to have tested positive for an EGFR mutation to take targeted therapies, he also lays out a criteria based on gender and smoking status, the very same criteria used to screen patients in the IPASS trial, to gauge if one might be better suited to begin with erlotinib or gefitinib.[34]

Notably, Bean Spirit advises against following his method from step 1 without adjusting for of one's previous clinical course and other extemporaneous factors. Flexibility is built in, for instance, in step 4 with axitinib. The drug comes with a range of toxic reactions that Bean Spirit lists, from soaring blood pressure and hypothyroidism that can seriously afflict the elderly, so he advises discretion with how long to stay on the drug. The forum is filled with threads asking for advice on whether one step should be stretched out or stopped short and a host of anomalies and ambiguities. The Four Step Method[35] in its extemporaneous flexibility thus differs significantly from clinical trial protocols that requires patients to flexibly submit to a strict if ever-changing protocol. Instead of a protocol and a strict schedule of studies the patient must submit to, Bean

[34] The only prohibition Bean Spirit recommends is if one has tested positive for another drug-sensitizing mutation, such as the ALK targeted by crizotinib, then the corresponding class of drugs should be taken. See Handou Jingshen (2014a; 2014b).

[35] HER-2 is a member of the EGFR family of receptors, so it is targeted also by gefitinib. 2992 is short for BIBW2992, also known as afatinib, a second generation EGFR TKI; 299804 is PF-00299804 or dacomitinib, another second generation EGFR TKI; TIVO-1 is tivozanib, a vascular endothelia growth factor receptor (VEGFR) and EGFR antagonist; 1120 is BIBF 1120 or nindetinib. Most of the drugs in steps 2-4 were not developed specifically for lung cancer but breast, renal and pancreatic cancers.

Spirit's method proposes a highly distilled schematic that guides practitioners in accommodating a boundless range of particularities.

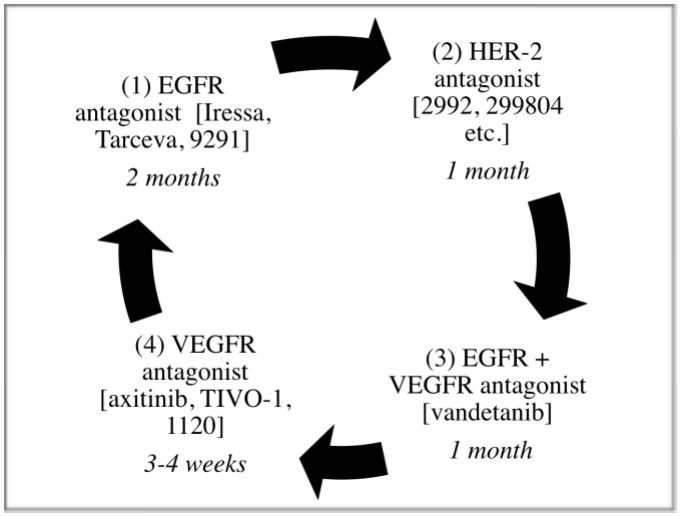


Figure 1: Bean Spirit's "Four Step Method" (diagram by the author).

Yinyin knew of the Four Step Method and admired Bean Spirit's courage, but she and her mother were not as intrepid in ingesting APIs manufactured in obscure facilities. Nonetheless she and Ms. Yuan carved out a treatment course that resembled the Four Step Method in several ways. First, Ms. Yuan and Yinyin used biomarkers to chart her response to drugs and to predict the onset of resistance, relying on scans as a confirmatory rather than an initial test. In contrast, the oncologists at University Hospital use the RECIST criteria created by an international expert panel to harmonize the evaluation of clinical trial regimens based on the size of the tumor on radiographic scans.[36] Bean Spirit, Ms. Yuan and other patients/families posting on DWC closely track blood-borne tumor markers such as CEA instead of tumor size, as the former can be more sensitive predictors of tumor growth. As Bean Spirit wrote, if at any point CEA increases by over

[36] Adopted and revised from a 1981 WHO guideline, it monitors the change in lesion size on radiographic scans as an objective measure of response to treatment and disease progression. This same criteria is used to assess whether patients qualify or failed treatments in drug gifting programs and clinical trials. See Chapter 2.

fifty percent, that is to be taken *as* a sign of incipient resistance. During the next rotation, a different drug in this same class ought to be substituted or the step skipped. Ms. Yuan and Yinyin decided it was time to stop taking Iressa when Ms. Yuan's CEA level started climbing. In so doing, Yinyin and Ms. Yuan found a crucial ally in Dr. Liang.

In Dir. Liang's clinic, laboratory markers and radiographic scans that monitor tumor growth are used to corroborate patients' reported symptoms, rarely to invalidate them. Yinyin, Ms. Yuan and Dr. Liang together decided that it was time for Ms. Yuan to change to 9291 based on Ms. Yuan's presentiments supported by elevated tumor markers in her blood and her aversion to two other types of chemotherapies Dir. Liang prescribed. In retrospect, each change in treatment appears to have responded to a constellation of factors which, taken in isolation, may not have been adequate to mark a new phase of the illness.

Deploying drugs in strategic combination to achieve synergistic efficacy over time is another practice endorsed by Bean Spirit. Instead of switching to a new type of targeted cancer drug according to Bean Spirit's method, Ms. Yuan tried traditional chemotherapy to resurrect the efficacy of Iressa. Here, blind ingestion deviates most significantly from the biomedical principle of targeting a mutation and recalls the poly-pharmaceutical formula deployed by Chinese medicine doctors. Herbal formulas are composed with the principle of counterbalancing inevitable the toxicities of each efficacious component to approximate a harmonious ideal. Over time, the formula must be continuously adjusted to correspond to changing patterns of illness. In all likelihood, the combinatorial aspect of blind ingestion traces its roots to Chinese medicine and Bean Spirit largely lent a useful formalism to a set of existing practices.

The online communities trading experience in blind ingestion generally maintain that genomic testing is a crucial piece of the experimental machinery for producing targeted cancer

drugs. Many are fervent readers of the oncological literatures and share their colloquial summaries online. Perusing the research, one might be surprised to find that there is abundant theoretical support for the unorthodox methods that grassroots experimentalists like Bean Spirit support. For instance, Ms. Yuan and Yinyin's attempt to "resurrect" the efficacy of gefitinib is also not without empirical basis, since "re-response" to first-generation EGFR TKIs after a few months break from the onset of apparent resistance is a known phenomenon (Pao and Chmielecki 2010, 769). Wu Yilong even co-authored a paper in 2017 stating the need for clinical algorithms that refine combinatorial regimens of targeted therapies for future lung cancer treatment (Su and Wu 2017). It is difficult to imagine that he didn't have in mind the Chinese patients who are already experimenting with combinatorial regimens. Given that diagnostic techniques and treatment guidelines have barely started taking into account the genomic heterogeneity of tumors, blind ingestion may actually appear less like a shot in the dark than biopsy-guided ingestion.

More broadly, blind ingestion expands the social field for evaluating and valuing experience beyond that of the experimental system of clinical trials. Over a thousand posts followed Bean Spirit's original post in 2014, many praising him for having brought a ray of hope to patients with metastatic lung cancer. But Bean Spirit's Four Step Method is also the outcome of taking on enormous embodied risk potentially convertible to surplus disease. There is considerable effort in oncology, medical genetics, bioinformatics and related fields to produce technologies that enable the "deep sequencing" of personal genomes, on which the success and failure of cancer therapies hinge (Greaves and Maley 2012, 308; Bruin et al. 2014; Jamal-Hanjani et al. 2017). Oncologists eager to study cancer phylogenetics can certainly imaging how intrepid patients like Bean Spirit might aid in fleshing out that knowledge. But as Waldby and

Cooper reminds us, the speculative promise of such innovations require the increasingly flexible and intensively surveilled labor of drug ingestion and metabolic self-transformation to realize their value (Waldby and Cooper 2014, 199). If a medicine of risk management forms an important infrastructure in the experimental system for producing the speculative event that abstracts surplus disease as future surplus health, blind ingestion salvages that labor in the form of shared experience for maintaining current efficacy. Drug rotation aimed at maximizing the efficacy of a wide range of available drugs to prioritize the deferral of drug resistance rather than generate epistemic surprise in the form of novel drug targets. Experiences of efficacy and risk management, salvaged from the supply chain of surplus disease, might then contribute an antidote to the foreclosure of collective futures.

CHAPTER 4

Exemplarity and Exceptionality: Two Cases of Pure Chinese Medicine

Introduction

One day while rounding with Dr. Sun Yibing on the inpatient integrated medicine ward, I was surprised to find Lu Yan, age 74, as the patient in Bed 23. She was sitting upright in bed wearing a red corduroy jacket and a star-patterned scarf. Like most patients on the ward, Lu Yan or Granny Lu (Lu-*nainai*) as I had known her, did not bother changing into the hospital-issued blue-and-white pajamas. We had first met two weeks ago at the apartment she shared with her son and daughter-in-law, Qin Chuan, a friend of mine who was a gynecologist at University Hospital. Then and now, Granny Lu gave no outward signs of being unwell.

I had learned from Qin Chuan that in 2011, Granny Lu was diagnosed with colon cancer, when she was 68. She subsequently when through surgery and chemotherapy. The chemo made her bed-bound and unable to eat for over a month. At one point, she went on intravenous nutrition, relying dissolved electrolytes, sugars and proteins entering directly into her veins. She was in remission for four years post-treatment, but a mass was found in her lung in 2015. This time, Granny Lu was far more hesitant about enduring another round of chemically-induced misery. She told me in the hospital:

> This time, I didn't want to bother with it. And you know Dr. Sun — I have many patient-friends (*bingyou*) who hold him in high regard. So I wondered if this could be treated purely with Chinese medicine (*chun zhongyi*). I told him, "if you could slow this down (*huanchong*) for two years it would count as a success."

Granny Lu met Dr. Sun through Qin Chuan, who entered University Hospital the same year as Dr. Sun. Qin Chuan held Dr. Sun in considerable regard, once telling me, "He is the only true

Chinese medicine doctor in the [integrated medicine] department." Granny Lu's encounter with Dr. Sun marked a turning point which she associated with a return to everyday comforts:

> I will not lie in bed all day. I'll be dancing, gardening, watching TV. If I can live like this for two years, I'll be happy. This year I've been doing quite well, very even-keeled. I was a little fatigued over the Spring Festival so I need to keep adjusting my attitude (*xintai*), but I'm confident about my success.

Instead of being confined to a hospital for weeks on end, Granny Lu preferred measuring out her remaining days through occasions of calendric significance punctuating ordinary activities. TV serials and the spring festival celebrations — such temporal markers applied to the sick and the well. Yet, Granny Lu is keenly aware of how extraordinary her return to ordinary comforts could be for those around her. "My success can bring hope to my patient-friends, success to my doctor and happiness to myself, so I will keep forging ahead," she said, but then adopted a surprisingly martial tone, "I'll blaze open a trail of blood (*shachu yitiao xuelu*)." Make no mistake, she seemed to be saying, embedded in the grains of ordinary comforts is a trail of bloody battles. When we spoke, Granny Lu was two months shy of her self-projected two-year horizon.

But what exactly constitutes cancer treatment with "pure Chinese medicine"? Leery of the toxic effects of chemo and radiation, many patients turn to Chinese medicine to curb the advance of cancer. Journal articles dating back to the 1970s have described Chinese medicine's facility for turning cancer into a more endurable condition when eradication was neither feasible nor wholly desirable (Oncology Department of Guangzhou Hospital of TCM 1974). This was decades before Chinese oncologists pronounced that a third of cancers could be managed as a chronic illness with surgery, radiation, chemotherapy and a new generation of molecular targeted

therapies.[1] These days, one frequently hear expert organizations on both sides of the Pacific proclaiming cancer to be a chronic illness (National Comprehensive Cancer Network 2019; China Anti-Cancer Association 2016). But how might Chinese medicine slow down a chronic but ultimately terminal condition? With what expectations and metrics do patients and doctors reckon success?

Before I broach a response to these questions, I need to describe how I met Granny Lu, beginning from my first meeting with Qin Chuan. In 2011, I learned through the grapevine at University Hospital about a gynecologist who was also practicing Chinese medicine. In a small operating suite in the outpatient clinic of University Hospital's Department of Obstetrics and Gynecology, I found her performing acupuncture and moxibustion. A curtain separated Qin Chuan and her patient, who was a professional thespian, from another patient getting an abortion on the other side of the curtain. Meanwhile, the smell of mugwort from moxibustion filled the entire operating suite. Across this curtain, the notion of "staging efficacy" took nascent shape as I marveled at how Qin Chuan enacted a world of Chinese medicine in the unlikeliest of places.

When I returned to Wuhan in 2017, Qin Chuan was in the process of opening a private Chinese medicine clinic and soon resigned from University Hospital. Readily averring that she has turned away from Western medicine to practice Chinese medicine ("*xizhuanzhong*"), Qin Chuan's resignation might be taken as an instance of breakdown in the integrative norms that subtend state-run health care. In her clinic, Qin Chuan continued seeing many of her patients from University Hospital who came to her for assorted ailments from infertility, endometriosis to

[1] *Health News* ran a headline on the chair of the China Anti-Cancer Association declaring during the launching of a mass health education program sponsored by the Ministry of Health that "cancer is a controllable chronic illness" (Luo 2006). See also Li (2007) and Shi and Sun (2008).

even one suspected case of appendicitis. But given that her practice was based in a small studio apartment, she no longer had access to an operating room and both high and low-tech diagnostic equipment. Qin Chuan thus practiced a version of medicine closer to "purely Chinese" than most other Chinese medicine doctor I encountered, and certainly those who worked within the state medical establishment. In this new setting, she developed some unwritten rules about which sorts of patients she would accept. While she would never deny the efficacy of pure Chinese medicine for treating late-stage cancer in theory, she also mentioned on a few occasions that she would be reluctant to see such patients in her clinic.

It was in no small part because Qin Chuan considers herself a devotee of Chinese medicine that Granny Lu sought out Dr. Sun, through Qin Chuan's recommendations. By staging an encounter between Qin Chuan's turn to pure Chinese medicine "outside the establishment" (*tizhiwai*) and Granny Lu's turn to pure Chinese medicine within the hospital, I aim to show that claims to efficacy with pure Chinese medicine is a complex infrastructural proposition. If Granny Lu's successful treatment of cancer with "pure Chinese medicine" might be understood as an exemplary case of its efficacy, then Qin Chuan's turn to Chinese medicine outside the establishments of state health care made an exceptional case for cancer. I posit that integrated medicine can be understood as a historical infrastructure insofar as Chinese medicine's purported purity entail both exemplary and exceptional cases.

In accentuating the infrastructural implications of pure Chinese medicine's exceptionality and exemplarity, I argue that the purity and hybridity of Chinese medicine under post-socialist state-run health care do not easily yield to a non-hierarchical network analysis. Needless to say, network-inspired ethnographies of the practices, discourses and socio-technical collectives known around the world as "traditional Chinese medicine" have lent important insights to

medical anthropology and science and technology studies (STS) (Zhan 2009; Scheid 2002; Karchmer 2010; Hsu 2015). To these ethnographers, Latour's characterization of the Great Divide at the heart of the modern constitution has been particularly influential (Latour 1993, 1-48). Latour argues that the binary opposition of nature and culture, science and society are "false" insofar as they authorize and enable the accelerated proliferation of mediating hybrids. The politics of narrating historical and scientific progress and critiquing its detriments both issue from this constitutive binary while obscuring the always incomplete work of hybridization and purification. Accounting for the always ongoing and often parallel processes of purification and hybridization then offers social scientists a fresh lens on hitherto obscure links between modernity, science and their non-modern "others." This has spurred important reflections on how the authority of biomedicine and science depends in part on constructing Chinese medicine as its non-modern, traditional opposite. Extending these Latourian actor-network frameworks, Mei Zhan described what she calls the "worlding" of Chinese medicine by centering the actual practices that constitute its heterogeneous networks from China to the United States. In Zhan's terms, "the knowledges, identities, and communities of traditional Chinese medicine are constituted through shifting, overlapping processes and networks that render the boundaries between traditional Chinese medicine, science, and biomedicine anything but fixed or self-evident" (Zhan 2009, 117). This is an important insight. However, a network-based approach is not without oversights and shortfalls.

First, accentuating hybridity often comes at the expense of ignoring "integrated Chinese and Western medicine" as a historically state-led project of institution-building as well as grassroots experimental collective. Given that all medicine in China had at one point gone through a process of integration, one should take seriously the Chinese biopolitical projects. As

the response to and outcomes of foreign imperialist pressures and indigenous political movements, the Chinese biopolitical project only inconsistently subscribes to a Great Divide which, after all, descended from European natural philosophy (Shapin and Schaffer 1985). From the negligence of indigenous modes of translation and state-led integration stems more recalcitrant methodological problems.

Where ethnographers claim that epistemic authority is upheld through the contingent making and remaking of boundaries between tradition and modernity, they accentuate the hybridity of Chinese medicine within institutions of Chinese medicine without interrogating the hybridity of Western medicine within Chinese institutions of Western medicine, thus reproducing the Chinese-Western binary. A genuinely symmetrical method is further impeded by a division of labor in the social sciences between scholars who study medicine in China and those studying Chinese medicine on the order of hemispheric neglect (Mason 2016; Song 2017; Lora-Wainwright 2013). The historical referents and material consequences of "integration" and "establishment" as actors' categories hence remain largely unexamined. Without accounting for the regionality of the health care "establishment" (*tizhi*) from which purity and hybridity issue, whether coded as "Chinese" or "Western," it appears as if indigenous Chinese actors take no notice of the relational coproduction of purity and hybridity. The hybridity of clinical objects and processes then appear to be both ubiquitous and yet to have somehow evaded the notice of everyone except the ethnographer. A reduction to networks without accounting for the regionality and hierarchical orders within institutionalized clinical encounters could thus provoke attributions of "false consciousness" or "postcolonial condition" to assertions of purity. Little room is then left to ponder purity (and hybridity) as strategic claims that may be clarified from a more dialectical and infrastructural analysis.

Rather than positing the What I mean by infrastructural analysis forefronts the scalar difference and relational interconnectedness between seemingly incompatible claims to purity and hybridity. While a network-based approach readily identifies processes of mutual mediation connecting purity and hybridity, it is less attuned to the temporary hierarchies and localized stabilities in "knowledges, identities, and communities" that an infrastructural analysis can contextualize. Multivalent translations of "staging" allow me to capture these differentiated yet related strata of infrastructure. On the one hand, the disparate Chinese term for staging$_3$ (*shangyan*) as the performance occasioned and stage$_4$ (*wutai*) as the place of performance helps bring out the non-derivative mutuality between cases (of hybridity or purity) and infrastructure to highlight the emergence and disappearance of conventional structures. I use the term "structure" in a generic sense of an ordered hierarchy of concepts or social groups.

Take, for instance Bourdieu's idea of *habitus*, or "structuring structures" that incorporate fields of practice while enabling embodied practitioners to accommodate and adjust to emergent constraints. The interplay between staging$_3$ and stage$_4$ can compared to the specific structures of practices that evolve from higher level structuring practices or *habitus*. of As a "product of history" that produces "more history" in the form of individual and collective practices "in accordance with the schemes generated by history," *habitus* is both generative and generalizing (Bourdieu 1992, 58). Bureaucratic institutions are a particularly fruitful site for exploring the effects of *habitus*. Educational institutions, for instance, not only prescribe the rules of grammar and orthography but instills through disciplines and drills a pre-reflexive sense of propriety such that, in the final instance, students spontaneously produce the correct spelling in countless particular contexts. One might see in Qin Chuan and Granny Lu's turn to Chinese medicine strategic orientations produced by state-sanctioned schemas of bifurcation between Chinese and

Western medicine. Yet, the notion of *habitus* also generalizes and glosses over the differences between various alignments with or against the dominant generative schema. It would not, for example, differentiate between the exemplarity embodied by Granny Lu and of exceptionality inhabited by Qin Chuan. Making additional distinctions for translocal classificatory schemata or rules ($staging_1$) and the historical evolution their contexts of application ($stage_2$) beyond habitus has the added benefit of maintaining a pluralistic field of hierarchically organized structures and practices. Keeping multiple dimensions of infrastructure in view is particularly important for understanding the conditional purity of Chinese medicine, with profound biopolitical implications.

Structures of exemplarity and exceptionality, wherever they emerge, have biopolitical implications. An example of the ambiguity between exceptionality and exemplarity can be found in Farquhar and Zhang's elaboration of the sovereign composition of cultivating life (*yangsheng*) in post-socialist Beijing, drawing on Italian philosopher Giorgio Agamben's exegesis of the Greco-Roman roots of modern biopolitics (Farquhar and Zhang 2005). Noting that Aristotle made a distinction between bare life of animals (*zoë*) and political life of citizens (*bios*), Agamben argues that sovereignty depends on a structure of exception which constitutes the law by situating both the sovereign and its mirror image of bare life outside the law. The inclusive exclusionary structure of exception has been the fount of power in modern sovereignty which manipulates bare life through a set of biopolitical technologies, most iconic of which was the concentration camp. Farquhar and Zhang finds the structure of the sovereign exception "eerily useful" for understanding the logic of the Maoist revolutionary state based, as it were, on the violent expulsion of its enemy others. Nourishing life in China's post-Mao capital, on the other hand, derives power not from sovereign states of exception, but through a generative biopolitics

rooted in classical Chinese philosophies of lordship that cultivates expansive sociality through exemplary personhood.

But structures of exceptionality remain relevant beyond Mao-era political movements that turned kin and kith against each other. Bare life as "life devoid of value," Agamben notes, "applies to those incurably lost because of illness or accident" (Agamben 1998, 139). Apparatuses of biomedical surveillance ensures that bare life "dwells in the biological body of every living being" (Agamben 1998, 140). This is the situation that patients deemed terminally sick find themselves in when treatments are availed only by becoming experimental subjects. A medicine of risk management outlined in the previous chapter might then be analyzed as structures of exceptionality insofar as the value of experimental subjects is produced through their selective exclusion from therapeutic citizenship. We might even hear references to the violence of such inclusive exclusion in the "trail of blood" that Granny Lu described. And yet, Granny Lu managed to both inhabit a structure of exception in which she was temporarily caught in tandem with exemplifying the social and therapeutic efficacy of pure Chinese medicine. The realization of her exemplarity comes in the anticipatory form of bringing "hope to my patient-friends, success to my doctor and happiness to myself." Somehow she managed to draw forth a generative mode of biopolitics through inhabiting an everyday *mise en scene* of television dramas, holiday preparations, herbal medicines, and occasional hospitalizations. It thus does not appear to be the case that bare life has become a universal condition "no longer confined to a particular place or a definite category" (Agamben 1998, 140), pace Agamben. Farquhar and Zhang calls the arts of self-cultivation "a case of and a challenge to the biopolitical projects of state and transnational apparatuses" (Farquhar and Zhang 2005, 303). I extend their insight

toward tracing an infrastructure that enable localized structures of exemplarity and exceptionality to, first of all, become encased and, moreover, mutually articulate.

Strategies of exemplifying Chinese medicine's purity in cancer treatment hinges on demonstrating cancer's exceptionality. A differentiating medium or infrastructure implicitly potentiates this relation without resolving it into binary schematics of Chinese/Western or even purity/hybridity.[2] I allude to this infrastructure by outlining the broadly referenced principle of *fuzheng quxie* or "supporting orthopathy and dispelling heteropathy" that at first blush appears to be a "logic of practice," à la Bourdieu, for integrating Chinese and Western medicine in clinical settings. But, as I will show through discussions within the field of Chinese medical oncology, this general schematic unfolds through polemical and didactical exemplarity embodied in case records. In the context of an integrative infrastructure, the principle actually indicates the exceptionality of toxic treatments that constitute the royal share of biomedical interventions against cancer and the exemplary "purity" of Chinese medicine when it strategically switches between toxic cures and soothing medicaments. Mobilizing what are considered toxic treatments within "pure" Chinese medicine against cancer enacts purity insofar as it inverts the biomedical reliance on consistently toxic treatments to realign already-intermingled fields of Chinese and Western medicine.

My second and related task in this chapter is thus to interpret the case record as textual exemplifications of "infrastructural inversion," a phenomenon described by theorists of large scale information systems that accentuates moments of breakdown exposing normally invisible operations (Bowker and Star 2000). As I show through my reading a case from the records of Dr.

[2] This definition of infrastructure is inspired by Star and Bowker 2000, but also the Derridean philosopher Gasché (1986, 152), who influenced Volker Scheid's (2002) important infrastructural ethnography of Chinese medicine.

Piao Bingkui, a senior Chinese medical oncologist in Beijing, the exemplarity of the case has to be framed as an inversion of ubiquitous and tacitly accepted infrastructural conditions.

In parallel with Granny Lu's case of exemplifying efficacy, I finally argue that Qin Chuan's resignation from the health care establishment can be framed as a form of inversion. However, to understand how their strategies of infrastructure inversion are oppositional without being mutually contradictory or conflicting requires the lens of synthesis. Synthesis pertains to a multiplicity of stages2/4 in mediating stagings1/3 so that apparent contradictions can be juxtaposed by a differentiating infrastructure (see Introduction). In contrast with Granny Lu, Qin Chuan was reluctant to treat patients with cancer using her version of "pure Chinese medicine." But like Granny Lu, Qin Chuan was inverting her exceptionality with respect to the hospital into exemplary independence from the hospital. The exception which Qin Chuan made "outside the establishment" for cancer must then be located as a part of a synthetic process that also informed Granny Lu's exemplarity vis-à-vis the state medical establishment. Inversion is then revealed as just a phase of the synthetic process of resituating local structural conditions vis-à-vis a dispersed infrastructure, thereby sustaining the differentiating potential of the infrastructure.

Supporting Orthopathy, Dispelling Heteropathy

Casting one's gaze over the literatures of "Chinese medical oncology (*zhongyi zhongliuxue*)," a post-1950 clinical discipline issuing from a state program of integrating Chinese and Western medicine (Chinese Medical Association 2010, 139-40), there is no dearth of cases in which cancer treatment is pursued mainly with Chinese medicine. Textbooks and pamphlets for lay and expert audiences edited by researchers at the Cancer Institute of Chinese Medical Sciences during the 1970s, when integrated medicine was hegemonic, reserves a privileged place for

Chinese herbal therapies ahead of chemotherapies (National Office for Cancer Prevention and Control 1973, 100-4). In 1978, a textbook aimed at a more specialized audience devotes a whole chapter to surveying Chinese medical theories and remedies for oncological diseases right after the introduction. Recent oncology handbooks and textbooks, in contrast, contain peripheral references to Chinese medicine as supplementary to, if not inconsistent with, anti-tumor treatments.[3]

Nevertheless, oncology departments affiliated with Chinese Academy of Chinese Medical Sciences (CACMS) formerly known as the Research Academy of Chinese Medicine, Beijing University of Chinese Medicine (BUCM), and Guangzhou University of Traditional Chinese Medicine (GUCM) continue to produce publications in the integrative sub-discipline of Chinese medical oncology. Case records of famous physicians are regularly published in journals and assembled in edited volumes by experts and enthusiasts alike. Browse the medical aisle of any large bookstore in China and one will find a wealth of case histories, anti-cancer formularies and even theoretical treatises (see Appendix 3). The common thematic thread of "*fuzheng quxie* (supporting orthopathy and dispelling heteropathy)" runs through all these texts.

Broadly speaking, Chinese medicine treats an agonistic body never wholly disentangled from the disease process afflicting it. Its treatment of neoplastic diseases is no different. Parsing the procedures for tempering and reordering agonistic processes in terms of a struggle between *zheng* and *xie* has ancient roots from the *Huangdi neijing* or the *Inner Canon of the Yellow Emperor*. This collection of texts attributed to the legendary sage Huang Di (Yellow Emperor),

[3] In Yu and Hu's *A Manual on Clinical Oncology Diagnostics and Treatment* (3rd edition, 2013), a desktop reference widely used by oncologists at University Hospital, discussion on the role of Chinese medicine in cancer treatment is limited to a single paragraph (p. 83) under the subsection heading, "Other Treatments." The rest of its 541 pages are focused on staging and chemotherapeutic regimens for tumors sorted by anatomical origin.

likely compiled around 200 BCE from earlier sources, is widely considered the most important philosophical treatise in Chinese medicine.[4] Modern textbooks contain abundant references to *zhengqi* and *xieqi*, translated by Manfred Porkert as orthopathic *qi* and heteropathic *qi* from the Greek stems of "proper to" and "different from" (Porkert 1974, 52-54). *Qi*, the character for which represents air, vapor or breath, conveys an energetic field lodged between the incipient agents of change and their material effects. A more detailed explication of these terms takes volumes.[5] For my purposes, Nathan Sivin helpfully glosses orthopathic *qi* as what "maintains and renews the measured, orderly changes that comprise the body's normal processes" and heteropathic *qi* as what "causes change that violates that normal order" (Sivin 1987, 49). The old and capacious idea of *fuzheng quxie* or "supporting orthopathy and dispelling heteropathy" thus guides the treatment of any malady. It applies to cancer treatment with a few important accents.

[4] In his translation and commentary of the canonical text, Paul Unschuld advocates for a more historicist reading of *zheng* and *xie*, rife with moral intonations from the turbulent times of the Warring States period in which the text originated, as *righteous* and *evil*. These connotations still audible in modern-day Chinese, are suppressed by the neologisms orthopathy and heteropathy (Unschuld 2013, 10; 2006, 202). The latter translation is, however, highly adapted to clinical work. In Chinese medical oncology texts, *zheng* and *xie* appear as technical terms indicating a dialectical relationship between the tumor and the body that the clinician must constantly revisit and reanalyze.

[5] In *Volume 6, Biology and Biological Technology* of the monumental *Science and Civilisation in China*, Joseph Needham and Gwei-djen Lu translates *qi* (or *chhi*) from the *Inner Cannon* as pneuma and describes its philosophy as pneumatic. *Zhengqi* or "true pneuma" can be considered a general term for bodily vitalities endowed by heaven as intrinsic constitution and external nourishment extracted from food. *Xieqi*, entails unseasonable and harmful winds, a chief pathogen in Chinese medicine, as well as virulent poisons in the food, water, air and insects of all kinds (1999, 74-84). Farquhar follows Porkert in translating *qi* as "configurative force" related to yet distinct from the unitary and cosmogonic *qi* at the origin of the universe according to the *Inner Canon*. Chinese medical theory qualifies *qi* into many types (essential *qi*, defensive *qi*, stomach *qi*, etc.) pertaining to agonistic processes. The dualism of *yin* and *yang* as mutually embedded opposites that struggle with and become each other are useful for analyzing specific phases of the continuous generation of *qi* transformations (Farquhar 1994b, 32-36).

In Chinese medical oncology, *zheng* and *xie* tend to cleave around a poisonous lesion at once malignant and embodied. Take, for instance, the following passage that succinctly summarizes the standard approach in treating malignancies explained by Dr. Zhou Daihan, a renowned physician of Chinese medical oncology at GUCM who was awarded the superlative honor of Master Physician of National Medicine (*guoyi dashi*) in 2017:

> Chinese medicine believes the disease process of malignant tumors to be "poison arising from the five *zang*-organs" (local manifestation of pathogenesis in the inner *zang*-organs) and "poison deeply rooted with hidden offshoots" (lesion extending from inside out, concealed yet widespread); its characteristic treatment [applies] a global view of *bianzheng lunzhi* [pattern differentiation and treatment designation]; its treatment method either dispels heteropathy [*quxie*] and reduces the tumor or supports orthopathy [*fuzheng*] to bolster depletions. [Treatments] ought to be tailored through frequent weighing and balancing of body-tumor and global-local relations. (Zhou 2007b: 7)

Moving from the dyads of global-local, body-tumor and orthopathy-heteropathy, this passage moves from what seems like contradiction to contradiction without easy resolution. One the one hand, describing the malignant tumor as embedded in the internal organs[6] or even using the decidedly modern term *bingzao* (lesion) appears to ferry in biomedical understandings of cancer as an organ-specific neoplasm. On the other hand, the author insists that treatments "ought to be tailored through frequent weighing and balancing of body-tumor and global-local relations," implying that "dispelling heteropathy and supporting orthopathy" constitutes a shifting pivot between contradictory strategies and interventions.

In an article published in the English language *Journal of Traditional Chinese Medical Sciences*, Hu Kaiwen and Zhou Tian of Dongfang Hospital affiliated with BUCM cites the *Inner*

[6] The five *zang* organs include Heart, Lung, Liver, Spleen and Kidneys. These describe functional systems more so than physical structures and hence overlap but are not equivalent to their anatomical counterparts.

Canon ("*Huangdi's Canon of Medicine*" below) to underscore the timely discontinuation of toxic therapies as key to what they call "Green Cancer Therapy":

> It is stated in the *Huangdi's Canon of Medicine* that "When lethal treatments were adopted, they should be discontinued when six-tenths of the disease is eliminated; When treatments with moderate toxicity were chosen, they should be stopped when seven-tenths of the disease is eliminated; When treatments with mild toxicity were using, they should be discontinued when eight-tenths of the disease is eliminated; Even if using non-toxic treatments, they should be terminated when nine-tenths of the disease is wiped out"…Thus, do not attempt to make a radical cure…In the treatment of cancer, Chinese medicine does not go after the "complete eradication of evils."[7] (Hu and Zhou 2016)

Here, Hu Kaiwen appears to provide a clearer set of rubrics for striking a balance between supporting orthopathy and dispelling heteropathy, namely, by adjusting the intensity of treatment in inverse proportion to its toxicity.

What Hu Kaiwen recommends elsewhere in this article is to begin cancer treatment by sending a needle with an electrode on its tip into the tumor to burn the lesion (i.e. radiofrequency ablation) or, alternatively, a probe that circulates a liquid coolant to freeze the tumor (i.e. cryoablation). Both methods attempt to locally suppress the tumor using techniques of "minimally invasive surgery" that does not involve large incisions, acceptable to the Chinese medicine doctor as long as eradication of all detectable malignant cells is not pursued. While minimally invasive surgery might appear as an entirely anachronistic graft to an exegesis of the *Inner Canon,* the authors duly classify what surgery considers to be "minimally invasive" to fall in the category of "lethal treatment" that must be applied most sparingly. They moreover accentuate the hot and cold qualities of radiofrequency ablation and cryoablation, respectively,

[7] In a Chinese version of the article authored by Hu Kaiwen, "evils" in the last phrase corresponds to heteropathy (*xie*).

differentiated according to the local pattern of the tumor to which treatment must respond.[8] This is not only consistent with contemporary Chinese medicine's insistence on designating treatment based on patterns (*zheng*) but also echoes the historical practices of Chinese external medicine (*waike*) that advocates for yin-and-yang differentiation based on the hot or cold characteristics of the boils and eruptions found on bodily surfaces.[9] Following this initial stage of focal treatment, Hu recommends following up with herbal medicines that bolster orthopathic *qi*. As the chair of oncology and the director of Dongfang Hospital, Hu Kaiwen does not shy away from appropriating biomedical techniques. Equating heteropathy with the visible lesion allows him to do just that.

[8] See Hu and Zhou (2016, 203). Specifically, Hu recommends matching the surgical modality to the tumor's metabolic status on PET-CT scans. On these images, higher metabolic states or "hot" tumors show up as bright red and should be neutralized with argon-helium cryosurgery, whereas lower metabolic states or "cold" tumors which appears dark should be attacked with radio-frequency ablation. Of course, no Western medicine surgical oncologist would think of parsing the qualitative interactions between his or her intervention and the target lesion in this manner.

[9] External medicine treats localized lesions or eruptions on the body's surface including tumors, tubercles, cysts and abscesses but also injuries from fights and falls. Surgical treatment (such as lancing of an abscess) makes up a small portion treatment, which includes an arsenal of pills, powders and patent medicines that can be ingested or externally applied. Chinese external medicine exerted a seminal influence on the post-1950 formation of Chinese medical oncology. Wang Pei (王沛), Hu Kaiwen's teacher at Dongzhimen Hospital affiliated with BUCM, is a renowned external medicine specialist. The Chinese medical oncology department at Guang'anmen Hospital affiliated with CACMS recruited Duan Futing (段馥亭) who started the Huabei Guoyi Xueyuan (North China Academy of National Medicine) with renowned physician Shi Jinmo. Duan Futing's son Duan Fengwu (段凤舞) became a respected oncologist in his own right, also affiliated with Guang'anmen. Zhang Daizhao (张代钊) a western medical graduate of Shanxi Medical College who participated in the first cohort of "Western Medicine Studying Chinese Medicine" apprenticed with Duan Futing (Zhang 2015, 24). Zhang Daizhao and Duan Fengwu taught many of the senior physicians at Guang'anmen's oncology department including Piao Bingkui, the current chair of the department (Hua & Hou 2014, "Zhang Daizhao's Preface"). In 1983, Zhang Daizhao founded the oncology department at China-Japan Friendship Hospital in Beijing (Zhang 2015, 40).

In the works of Hu's colleague at Guang'anmen Hospital affiliated with the CACMS, a one-to-one correlation between heteropathic *qi* and the visible lesion proves more elusive. Piao Bingkui received his medical degree first in Western medicine before joining the third cohort of "Western medicine studying Chinese medicine" in 1958 (Hua and Hou 2014, 4). The same year saw the founding of the Oncology Department at Guang'anmen and its Western medicine counterpart at Ritan Hospital, which later became the Cancer Hospital of the Chinese Academy of Medical Sciences (CAMS). To this day, these two institutions are, respectively, the premier cancer centers in Chinese medical and Western medical oncology in China. Since the early 1990s, Piao has led the Oncology Department at Guang'anmen Hospital. The *Collected Experiences of Piao Bingkui in Treating Malignant Tumors* (*Collected Experiences* hereafter), is an collection of scientific papers, theoretical treatises and case records compiled by his pupils Hua Baojin and Hou Wei, who are both senior clinicians at Guang'anmen Hospital.

On *fuzheng quxie*, the *Collected Experiences* has this to say: "How should one seamlessly combine dispelling heteropathy and supporting orthopathy in treating malignant tumors? Which is primary and which is secondary, which leads and which supplements? This has always been contentious and never conclusively resolved" (Hua and Hou 2014, 28). Orthopathy and heteropathy are not categories pre-populated with syndromes or disease entities in isolation of their particular occurrence. As innumerable meanings accrue to the widely applicable "orthopathy-heteropathy struggle," Farquhar notes that the individual terms are relatively meaninglessness apart from concrete situations (Farquhar 1994b, 87). For patients, clinicians or ethnographers curious about how these terms are mobilized in clinical action, case records uniquely encapsulate the blend of daring and caution needed to respond to an ever-changing and devastating illness.

I've included a translation of "The Case of Ms. Yang," a case record from the *Collected Experiences* (See Appendix 2). Summarily, what the authors describe as a case of cancer treatment with "pure Chinese medicine" unfolds through four encounters initiated by Ms. Yang's rejection of surgery at the time of her diagnosis. At first, she is prescribed a combination of mostly bolstering and heat clearing herbs tailored according to the pattern of "Qi-Yin dual depletion" which precluded attacking the lesion. By the third encounter, her prescription has shifted significantly with the addition of insect-based remedies (infected silkworm, centipede and scorpion) considered more toxic, while the overall number of drugs has been reduced. Four months later, Ms. Yang went to the Cancer Hospital of the CAMS for a check-up. She found there that the level of CEA in her blood, a marker of tumor growth, had gone up. Here, the case reaches its climax as the hazards of cancer treatment tests both Piao's clinical acumen and Ms. Yang's resolve to continue treatment with pure Chinese medicine. For reasons unrevealed, Ms. Yang returned to Guang'anmen Hospital to be admitted for over a month, where a combination of herbal treatments (sans insects) eventually stabilized her condition without resorting to chemotherapy. The case closes with the authors noting that she was seen in the clinic for another year in stable condition.

If a case history was written about Granny Lu, it would contain similar crossovers from Chinese to Western medicine and back again. When cancer returned to Granny Lu's lungs in 2015, she initially went back to University Hospital's oncology department where she was told that she needed surgery, radiation and chemotherapy. Later I learned from Dr. Sun that it was at his insistence that Granny Lu agreed to go through with another surgery. She then went through the motions of getting fitted with a thermplastic cast in preparation for radiation treatment. But before her first scheduled dose, her lungs suddenly filled up with fluids, which could have arisen

from any number of contingent changes: injury during the surgery, an enlarging tumor, an infection. But as the fluid moved changed the positions of organs inside her thorax, the cast made for radiation therapy was no longer usable. According to Qin Chuan, it was at this point that they decided to ask Dr. Sun to drain the fluids in her lungs using herbal medicines topically applied and ingested. Dr. Sun was reluctant at first, suggesting that chemotherapy might work faster. Yet as the heteropathic fluid dried up over the next few weeks, Dr. Sun agreed to treat Granny Lu exclusively with Chinese medicine with growing confidence.

Notably, the "purity" of Chinese medicine in both the cases of Granny Lu and Ms. Yang emerged in retrospect. Prospectively, the Chinese medicine clinicians were not committed to only using Chinese herbal medicine, even if they tried to honor the patient's desires to rely minimally on surgery, chemotherapy and radiation. "Pure Chinese medicine" as a treatment strategy is not tantamount to relinquishing biomedical technologies in advance. But the exemplarity of Ms. Yang's case record shines through because no remedy was applied without alteration over a protracted clinical course. A regimen of the same chemo drugs injected every week for three months, for instance, would in advance contradict the vital flexibility of *fuzheng quxie*. It would also ignore the generative ambivalence of toxicity which Chinese pharmacopeia since the earliest days understood to be interchangeable with efficacy.

In an iconic passage from the Han Dynasty text *Huainanzi* from the 2nd-Century BCE, *Shennong*, the legendary Divine Herdsman who helped his people sow grain and tasted herbs to determine what nourished and what healed, found "in a single day 70 [herbs, waters, etc.] that were medically efficacious."[10] The Chinese character translated as "medically efficacious" is the

[10] Tanslated in Unschuld (1985, 113). See Obringer (1997) for an explication of the Chinese notion of efficacy/toxicity along the lines of the Greek understanding of pharmakon which is both a remedy and a poison.

same as harmful poison (*du*), and carry this latter connotation in a neighboring section of the text. The *Shennong Bencaojing* or *Classic of Herbal Medicine* named after the same mythic herdsman compiled around the 3rd-Century CE classifies 365 drugs into upper, middle and lower classes based on their potency or *du*. Here too, *du* ambivalently connotes toxicity and efficacy. This is a general form of toxicity that would be colloquially separated from categorical toxins. Indeed, categorical toxins like arsenic trioxide (*pishuang*) are rarely prescribed by a Chinese medicine doctor today. Yet, "using poison to combat poison" (*yidu gongdu*) remain a tried and tested strategy for aggressively dispelling heteropathy (Needham, Lu and Sivin 1999, 115; Obringer 1997). When one opens a package of mostly herbs and finds in their midst whole dried insects like centipedes and scorpions, which count among the "five poisons" that emerge during the Duanwu Festival in the fifth month of the lunar calendar, the sight must be both a bit hair-raising and, for that alone, exceptionally potent.[11] As Chinese medical oncologists repeated described to me, the slithering creatures that contribute to the extraordinary potency of these treatments work by following the tracts of *qi* transformation to penetrate and dislodge a mutinous congestion.

Cancer stands out as an exceptional challenge for clinicians wary of the toxicity of their therapies. A toxic congestion highly interdependent on the orthopathic processes of the five *zang*-organs "deeply rooted with hidden offshoots," toxic drugs could in turn be exceptionally generative of heteropathic *qi*. Instead of piercing and dispelling the toxic congestion, cavalier application of lively creatures like centipede and scorpion can create openings for malignant taproots to tighten their grips. Among all the maladies, then, cancer stands out for the intensity of

[11] The five poisons include centipede, scorpion, snake, salamander and toad. They are warded off by drinking and spraying realgar wine, or wine made with arsenic sulphide.

reanalysis required. When a physician should relent from combatting and switch to bolstering, however, is a delicate problem that yields no constant principle.

As tempting as it is to map this balancing act onto a division of labor in which Chinese medicine takes over supporting orthopathy and Western medicine, dispelling heteropathy, theoretical tracts and case records readily complicate such a static division. Toxic *materia medica* can target a localized lesion and surgical interventions can differentiate patterns. Case records acquire their exemplary outlines by showcasing the infrastructural conditions which make the untimely or, worse yet, absence of switching between attacking and bolstering so tempting. These conditions constrain the conduct of Chinese medical oncologists so that it often comes down to patients to take the initiative in diligently shifting the pivot between toxicity and efficacy, embodying a strategic purity in the process. I turn to these contraints next.

Integration and its Discontents

A few months into fieldwork, I attended a lecture at Provincial Hospital given by Hu Kaiwen, an alumnus of Hubei University of Chinese Medicine (HUCM) and director of Dongfang Hospital. I was invited by my friend Zhu Rui, a graduate student of Chinese medical oncology whose advisor was Liang Limin, the Director of Oncology at Provincial Hospital affiliated with the HUCM. Sitting next to Zhu Rui, I spotted the majority of Provincial Hospital's oncology department including Dir. Liang.

I met Zhu Rui quite fortuitously in the Oncology Department of University Hospital where she spent nine months of her second year in a three-years graduate program. Her trajectory in graduate school is not atypical for students of specialties within Chinese medicine. Many

oncologists at Provincial Hospital received a substantial portion of their training at older and better established Western medical oncology departments like that of University Hospital.

I bring up the circumstances under which I befriended Zhu Rui to point out just how much of Chinese medical education has had to include Western medicine, taking up roughly fifty percent of the undergraduate curriculum in Chinese medicine universities (Karchmer 2017, 510). Moreover, a graduate of Chinese medicine may end up using very little of their Chinese medical knowledge in inpatient treatment facilities. This "postcolonial" form of medicine, as diagnosed by Eric Karchmer, is potentially devastating to the internal coherence and transmission of Chinese medicine (Karchmer 2010; 2017). When enrolled as a medical student at BUCM, Karchmer found that much inpatient clinical work including the composition of medical records was closely modeled on biomedical norms to the point of marginalizing "pattern differentiation and treatment designation," the all-important clinical-diagnostic pivot of post-1950 "Traditional Chinese Medicine."

Almost all Chinese medicine clinicians today would agree that *bianzheng lunzhi*, usually translated as "pattern differentiation and treatment designation," is the living pulse of their practice. Often shortened as "pattern differentiation" (*bianzheng*), it refers to a method for epitomizing a constellation of signs and symptoms as a pattern corresponding to a combination of efficacious herbs over a sequence of encounters, often by applying highly technical rubrics that articulate the spatiotemporal dimensions and embodied qualities of an illness.[12] Regardless

[12] See Farquhar (1994b, 56). There are several main rubrics of pattern differentiation. For example, the Eight Rubrics (*bagang*) method of pattern differentiation reminds clinicians to assess every illness according to four contrastive pairs including yin-yang, depletion-repletion, hot-cold and inner-outer, totaling eight rubrics by which any illness can be specified (Farquhar 1994b, 76). Other methods of analysis may attend more explicitly to the predisposition of an illness to transform along circulation tracts or physiological sectors of the body.

of the specific rubric employed, a transforming pattern is the pertinent target of therapy. Patterns are difficult to reconcile with any fixed schema of nosological classification, such as the anatomical and pathological stage of cancer.

An analogy between the centrality of patterns (*zheng*) in Chinese medicine is often made with diseases (*bing*) in Western medicine (Karchmer 2010; 2017). The term *bing* equivocally refers both to Western medical diseases and loosely correlating indigenous Chinese nosological labels (e.g. *ruyan* or breast stone for breast cancer). As Karchmer points out, in modern-day hospitals, Chinese medicine doctors combine pattern differentiation and *bianbing — bing* differentiation — when filling out inpatient charts and ordering treatments. When Chinese medicine clinicians annotate a biomedical disease category alongside a pattern in medical charts, the *bing* is divided between the dichotomy between Chinese and Western, with its Western meaning ascendant for all practical purposes. According to Karchmer, this postcolonial double bind mobilizes "pattern" in the contradictory task of maintaining Chinese medicine's distinction from Western medicine while accommodating it at every turn. Notably, the same contradiction does not affect Western medicine doctors, who are allowed to prescribe Chinese medicinals without ever having to inscribe a *zheng* in their official records. Situated over this terrain of politico-epistemic asymmetry, Hu Kaiwen's lecture at Provincial Hospital came off as especially provocative, even galvanizing, for his audience of Chinese medicine physicians.

"Green Cancer Therapy"

Hu Kaiwen spoke for over an hour on "Green Cancer Therapy" (*zhongliu de lüse zhiliao*) to a packed auditorium, opening with the provocative statement that Chinese medicine does not think of cancer as neoplasms or "new growths." He cited the influential Johns Hopkins University

geneticist Burt Vogelstein who had recently co-authored a paper claiming that around two-thirds of malignancies can be attributed to genetic errors in normal cell division rather than environmental insults (Tomasetti, Li & Vogelstein 2017). As life expectancies increase around the world, cancer incidence invariably goes up because cells have more time to divide. "But Chinese medicine does not think this way," Hu insisted. He compared tumorigenesis to congestion in a traffic roundabout: there is nothing new about the roundabout and the cars are not actually multiplying, but the total configuration of cars-in-roundabout lead to the formation of local congestion.

Hu's analogy vividly puts cancer in terms of inextricably intertwined systemic processes consonant with "how Chinese medicine thinks." While it is not technically wrong to say that traffic congestion is the result of an overabundance of cars — as a tumor is the overgrowth of cells — Hu would say that this is not a very useful observation. Chinese medicine prefers thinking of the incarnate tumor as the concrete, receptive or *yin* component of animating and dispersed *yang* processes, with *yin* and *yang* as labels that refer to relative aspects of relational wholes.[13] If a local congestion is considered alongside the flow of traffic feeding in and out, then the congestion can be thought of as *yin* relative to its *yang* complement, which is the flow. If the movement of traffic is considered in tandem with the structures of the road, then the road might be thought of as *yang* with respect to the traffic, which now becomes *yin.* Differentiated yet interdependent, flows and congestions, tumor and body are not fixed entities, but local structures and dispersed infrastructures articulating shifting spatiotemporal relations. Congestion is then as much a situation of too many cars in one place as their disordered multi-directionality in many

[13] See Farquhar (1994b, 23-39) and Kaptchuk (2014 [1983], chap. 1) for extensive summaries of *yinyang* theory in clinical work.

places. The roundabout, for all its shortcoming as a bottleneck for converging lanes of traffic also vitally redirects them. It would be absurd to suggest that to relieve congestion, the whole roundabout should be excised.

During the question and answer period, Dir. Liang was quick to raise her hand. She introduced herself as a Western medicine doctor who studied Chinese medicine (to me, she also mentioned that she is a third-generation hereditary Chinese medicine practitioner), then posed the following questions: "What do you recommend for cases in which Western medicine has longstanding effective treatments, like chemo for small cell lung cancer? Would you still attempt to treat with Chinese medicine?" Having just given a talk exuding confidence in the unique strengths of Chinese medicine, Hu Kaiwen's reply was cautious:

> We're in the age of combined therapy. "Integrating Chinese and Western medicine" is China's unique advantage (*youshi*) and a catastrophe (*zainan*) at the same time. All of us [working] in Chinese medicine hospitals say that we ought to integrate, but you don't find Peking Union Medical College[14] promoting "integrating Chinese and Western medicine." Integration is not necessary when one-plus-one is no greater than one. No therapy is without its toxicity. Why make patients submit to additional treatment if it brings no added benefit? In such cases, save the patient needless expenses and suffering. After chemo, sometimes white blood cells go down or patients' nutritional status deteriorate. At that point, Chinese medicine has a role. But we have to be clear that we're playing a supportive role to Western medicine.

Hu Kaiwen answered Dir. Liang by fore-fronting the structural asymmetry between Chinese medicine than Western medicine in relation to a program of state-led integration. While what is "catastrophic" in this context is not the obsolescence of Chinese medicine under biomedical hegemony per se, it does mean that Chinese medical oncology has to share its scope of practice with Western medicine. But the structural asymmetry under which integration is enacted could

[14] Peking Union Medical College or PUMC the highest-ranked medical college in China founded by the Rockefeller Foundation in the 1920s.

also turn against Western medicine doctors if they're not careful. Hu's caution turns sharply critical if the additive efficacy of "one-plus-one" is applied to Western medicine. In his lecture and in published works, Hu emphasized that "Green Cancer Therapy" is better suited for patients with late-stage cancer than oncology's standard treatments, when chemotherapy and radiation have dismal rates of success. Since the majority of cancers in China are diagnosed at late stages, Hu does not cede as much ground to biomedical oncology as his answer to Dir. Liang might suggest.

Later, when I interviewed Hu Kaiwen at Dongfang Hospital, he claimed that many patients treated by Western medical oncology do not survive because the antagonistic treatments of Western medicine but in spite of them. Their chances of survival might improve if Western medicine relented from the "complete eradication of evils." Notably, Hu calls the first stage of "Green Cancer Therapy" in which antagonistic treatments are applied to attack the tumor locally, "Hegemon's Way" (*ba dao*), in contrast with the second and third stages when the proportion of bolstering therapies increase, which are dubbed "King's Way" (*wang dao*) and "Emperor's Way" (*di dao*), respectively. Only a Hegemon attacks enemies without mercy; the Yellow Emperor nourishes healthy *qi* so evil has no habitat. The political overtones do more than adapt moral metaphors to clinical scenarios. Attacking the tumor in the way of a Hegemon places no limit on the expense and suffering incurred on the patient in excising a carnal threat. Here, the structure of the sovereign exception reaches a self-destructive extreme. Extending his analogy of the traffic circle to the ascendancy of "Hegemon's Way" in Chinese oncology, one finds a critique of its foolhardy attempt to dispel congestion by excising the traffic circle (Hu and Zhou 2016, 204-205).

Karchmer is right to note that in inpatient settings, *bianbing* dominates to the point of making *bianzheng* seem dispensable (Karchmer 2010, 248). But where all treatments ought to by default be integrated, the dynamics of how specific therapies combine in Chinese medical oncology is more complicated than either an epistemic double bind or liberal intermixing. Hu's "Green Cancer Therapy" transitions from attacking a localized lesion to fine-tuning and adjusting local-global interrelations. As Zhou Daihan also explained in the textbook *Chinese Medical Oncology*, *bianbing* is advantageous for assigning specific treatments to target diseases, whereas *bianzheng* incorporates flexibility so no treatment can be applied without extemporaneous adjustment.[15] Savvy clinicians would dispense with neither flexibility nor specificity. In "The Case of Ms. Yang," herbs like barbat skullcap (*banzhilian*), glabrous greenbrier rhizome (*tufuling*), zedoray rhizome (*ezhu*) and coix seed (*yiyiren*) find their ways into the prescriptions in accordance with specific patterns, but they are also among the dozens of Chinese herbs shown to modulate cancer-targeting immune cells in the laboratory (Hua and Hou

[15] "We abide by the principle of *bianzheng lunzhi* in selecting the corresponding treatment (such as replenishing qi and nourishing yin, dissolving phlegm and dispersing lumps, clearing heat and resolving poison, reordering qi and enlivening blood etc.). If in making out treatment [we] also select drugs which are more active anti-tumor agents according to the cancer's histological characteristics and the results of modern pharmacology, such as Hedyotis diffusa (*baihua sheshe cao*), barbat skullcap (*banzhilian*), Euchresta japonica (*shandougeng*), Paris polyphylla (*zaoxiu*), and Asarum sagittarioides (*shancigu*) then this will greatly enhance its specificity [*zhenduixing*], decrease its blindness [*mangmuxing*], and potentially improve efficacy. In addition, certain Chinese *materia medica* extracts such as cinobufagin (extract of the Chinese toad), disodium cantharidate (extract of the Chinese blister beetle), Brucea javanica oil emulsion (extract of Brucea javanica) etc. also possess anti-tumor pharmacology and has been widely appreciated. From a modern perspective, selecting these anti-tumor medicines in cancer treatment belongs to "disease differentiation and treatment designation" (*bianbing lunzhi*); however, using anti-tumor medicines under the guidance of the principle of *bianzheng lunzhi* belongs to the integration of *bianzheng lunzhi* and *bianbing lunzhi…bianbing lunzhi* emphasizes a principled approach to disease treatment and *bianzheng lunzhi* brings out the flexibility [*linghuoxing*] of disease treatment in the form of personalized therapy. Both have their special characteristics and should be deployed in combination" (Zhou 2007, 56-7).

2014, 128-136). As long as *bing* and *zheng* partake without mutual prejudice in guiding the course of treatment, pattern differentiation has not been betrayed. More puzzling than why Chinese medicine has to make a double diagnosis, then, is why Western medicine does not.

Making Exceptions "Outside the Establishment"

There are several versions of the story of how Qin Chuan, known to her patients and followers as Teacher Qin, started studying Chinese medicine. To her patients, students and friends on WeChat, she posted the following story by way of introducing her father to the group. At this point Teacher Qin had already left University Hospital:

> In my decision to take the path of transferring from Western [medicine] to Chinese [medicine], [my father's] handiwork is undeniable. As a child, when I suffered from a stiff neck, snored too much, twisted my ankle, and later after I gave birth and developed arm pain, his massage mended me…He started out as a track-and-field athlete in high-jumping, graduated from *Wu Ti*,[16] but persisted in self-studying Chinese medicine throughout. When I was filling out my university application, he ordered: "go, study medicine!" At the time how could dad have known the difference between Chinese medicine and Western medicine? That condemned me to spend over twenty years of my life, if not almost an entire lifetime, investigating the vast gulf that separates the two. The biggest shock came when ten years ago, my dad was diagnosed with a space-occupying lesion in his gallbladder.[17] I remember it was large enough so that all of the doctors told him to get surgery or the outcome might be unthinkable. Seeing that he could not sleep all night from the agony, I too tried to convince him to undergo surgery. He insisted on staying in the Chinese medicine department for a week, then turned to tuning [*tiaoli*] on his own. Only he knows the kind of pain and suffering he had to overcome during that time to change the condition of his health for the better. I can tell that he came to a greater appreciation of the philosophy of life. I recall that I was left with a profound realization: Such a serious illness and you refuse surgery, would you have me imbibe the northwest wind?[18]

[16] An abbreviation for Wuhan Sports University that trains athletes competing at elite levels.
[17] *Zhanwei* or "space-occupation" is the Chinese term used. This is a technical term for a lesion of unknown histological type (benign or malignant) that shows up as an anatomical anomaly on imaging scans. See Chapter 2.
[18] "Imbibe the northwest wind" (*he xibei feng*) is an idiom meaning to lack the basic means of sustenance.

Qin Chuan's father's rejection of surgery for what sounded like an obstructing stone or even a malignant tumor in the gallbladder is here offered as an example of Western medicine's dispensability, one that fits well with the path that Qin Chuan took to become "Teacher Qin." In the decade following her father's diagnosis, Qin Chuan's professional life unequivocally turned from Western to Chinese medicine (*xizhuanzhong*).

Over numerous conversations with Qin Chuan, I learned that while the germs of her passion for Chinese medicine were planted by her father, it was fanned by her disillusionment toward Western medicine in the hospital where she worked. Around the time of her father's ordeals, Qin Chuan was an up-and-coming physician in University Hospital's Obstetrics and Gynecology Department, having recently returned from a yearlong fellowship at Peking Union Medical College in Beijing to begin doctorate studies in medical genetics. But a few months later, her advisor in Wuhan died from pancreatic cancer. She herself started experiencing stomach pains and began an alarming losing weight. Between following her advisor and emulating her father, she chose the latter.

Qin Chuan gave up on doctorate studies to devote her time to studying the Chinese medical literatures. Unlike formally trained Chinese medicine doctors, she did not begin with entry-level theoretical foundations textbooks that codified Chinese medical diagnostics and therapeutics around *bianzheng lunzhi*. Instead, her readings ranged widely from ancient classics like the *Baopuzi* by Jin Dynasty alchemist Ge Hong (b. 284), popular works by late-Imperial scholar-physicians such as Fu Qingzhu's (b. 1607) *Nüke*, as well as advanced introductions published by contemporary Chinese medicine physicians. She experimented with acupuncture, moxibustion, and herbal therapies, often first on herself and her family before offering them to her patients and colleagues.

Early on, Teacher Qin's patients were mostly women who turned up at University Hospital with gynecological complaints: menstrual pain and irregularity, breastfeeding mothers with mastitis, benign tumors of the uterus interfering with fertility. In comparison to the haste with which her colleagues reached for the scalpel for a "definitive cure," such as oophorectomy for endometriosis, Teacher Qin doggedly treated these women's symptoms with acupuncture, moxibustion and herbal remedies. For preserving their reproductive organs and enabling them to potentially and actually bear children, she earned the lifelong gratitude of many. Her patient ranks soon grew and even many of her colleagues were turning to her for sundry ailments. She claimed that every member of her department has been massaged, needled or smoked by her at some point; hunched over for up to ten surgeries a day, neck, back and joint pain were endemic among them. When I first met her in the impromptu clinic she set up in the outpatient surgery suite, guests in white coats frequently stopped by for a chat, then stayed for a session of acupuncture.

When I encountered Qin Chuan again four years later, her situation at University Hospital had slowly soured. By then, she was put in charge of the department's outpatient service, which reduced her monthly income compared to her colleagues who performed several surgeries a day.[19] She did not miss the heavy workload of inpatient obstetrics, but it was a matter of time

[19] Qin Chuan told me that her monthly salary was around 10,000 yuan, which is likely on par with Dr. Sun's salary at the integrated medicine department and the average salary for other internal medicine specialties like nephrology or (non-malignant) hematology. Rumor had it that the highest earning clinicians in the obstetrics and gynecology department and other high volume surgical specialties could earn 40,000 yuan a month. While students and clinicians all volunteered rough estimates of physicians' pay at each department, each department reportedly has a different algorithm for dividing up earnings among physicians of different ranks. Moreover, depending on station in state and professional societies, faculty income also widely vary. This includes the base civil servants' salary of around 3000-yuan per month for most rank-and-file clinicians.

before she became professionally marginalized, denied promotion to the rank of a full attending (*zhuren*) partly because she had abandoned her graduate studies. What was finally intolerable was when a newly hired department chair pressed the outpatient clinicians to prescribe more diagnostic tests, elective procedures and to increase the volume of admissions. One time, the new director personally came to the clinic to urge Qin Chuan to admit more patients over an upcoming holiday. Shortly after that incident, Qin Chuan told me that it was time for her to go. She had already started practicing for two afternoons a week in a small studio apartment she rented out of a commercial high-rise near University Hospital. She quit her job at University Hospital and dove into the burgeoning market for health care "outside the establishment."

Mei Zhan pointed out the widespread use of the term *tizhiwai* or "outside the establishment" in connection with a growing number of Chinese medicine doctors entering private clinics and academies as business partners, educators, clinicians or administrators following their formal training and, typically, a period of civil employment. These experimental and entrepreneurial practitioners are strategically located beyond the network of established health care and deliberately distance themselves from the most dogmatic aspects of *bianzheng lunzhi.* Exhausted by Mao-era dialectical materialism and, in fact, any ideology, they look to China's remote past to excite new visions for health care's future in the private sphere (Zhan 2016). Similarly disenchanted with the medicine of the "establishment" centered in large hospitals, Teacher Qin shaped her practice in deliberate distinction from it. Thus far in the dissertation, I've used "treatment" (*zhiliao*) as a catch-all term espoused by almost all doctors in China — Chinese or Western — that blurs the lines between symptom alleviation, ritual enactment and statistically proven cure. Teacher Qin is the sole exception to the rule. Rejecting

any ambiguity between biomedical treatment and traditional Chinese life cultivation, she insists, "an illness is nurtured against, never cured of [*bing shi yanghaode, bushi zhihaode*]."

Drawing on an eclectic blend of life nurturing (*yangsheng*), yoga, nutrition, functional medicine and Chinese herbal medicines, Teacher Qin guides her followers in the ceaseless exercise of self-cultivation. Her "clinic" operates as a social space as well as a treatment facility.[20] For one, her patients do not always find her in the clinic. Every month, she would meet with around a dozen patient-friends in East Lake Park, a spacious and immersive urban green space, to practice an idiosyncratic set of meditative exercises resembling *qigong*. At the end of one session on a crisp spring morning, I ended up with a group of ten women lying supine on the grass to bask in the sun. Afterwards, we went around in a circle describing our sensations. Such experience sharing continues on the clinic's WeChat groups, which are replete with testimonials about how an herbal recipe, an exercise or a piece of dietary advice warded off an encroaching illness or spared a visit to the hospital.

Treatments of a more direct kind do appear inside Teacher Qin's clinic. Throughout the day, patients might make appointments for sessions of acupuncture and moxibustion, performed by Teacher Qin or, more often, her assistants. Unlike acupuncturists in large hospitals who insert a dozen or more needles according to a standard set of acupuncture points, Teacher Qin uses no more than three needles at a time, usually on only one side of the body. Wary of any treatment potentially antagonistic to the body's orthopathic and recuperative capacities, including acupuncture, she always tempers it with warming and replenishing moxibustion. Pure Chinese

[20] See Farquhar and Zhang (2005; 2012) on contemporary Daoist nourishing life practices among retirees in Beijing. My fieldwork suggests that *yangsheng* has been taken up by a younger, urban and largely though not exclusively bourgeois demographic.

medicine, it seems, would admit no intervention that attacked the heteropathy without first altering the body's orthopathic processes.

For all its iconoclastic departure from the curative medicine of the hospital, the extent to which Teacher Qin's clinic is intricately enmeshed with state-run health care, in particular at University Hospital, might come as a surprise. This is largely mediated by her business partner and former student Xiaofan, who started the WeChat platform YM after graduating from the obstetrics and gynecology at University Hospital. YM allows patients to make appointments with dozens of physicians with whom Xiaofan has signed contracts including Teacher Qin. This sometimes created awkward situations while Teacher Qin was still practicing at University Hospital, in which her new patients from YM would make scheduled appointments with her that allowed them to cut in front of patients who had "hung up a number" (*guahao*) for a same-day appointment through the hospital, much to the latter's chagrin.

However, the online platform of YM is much more than a scheduling service. It also encompasses a tool for patients to rate their physicians and, because it is easily called up through the WeChat cellphone app, patients can join WeChat groups created by their favorite clinicians, obtain telemedical advice, and request and pay for prescriptions. Typical for Chinese patients, those with similar conditions encounter each other in the waiting rooms and sick chambers of large hospitals and form groups on WeChat, China's enormously popular social media cellphone app. One can imagine that the quasi-anonymous collectives[21] for blind ingestion discussed in the previous chapter grew out of face-to-face encounters in the outpatient clinics of large hospitals. On the most active groups, a huge amount of information is exchanged on a daily basis,

[21] Only recently did WeChat require real-name registration. However, people use avatars in WeChat groups, so a spectrum or hierarchy of anonymity can develop depending on how closely related "in real life" one might be to other members of the group.

including diagnostic scans, lab results, clinical advice and even prescription emendations. These groups are often moderated by a senior physician of repute or, more likely, his or her students. Xiaofan regularly surfs various medical WeChat groups to find new patients to refer to physicians listed on TM.

Once these patients meet with Teacher Qin, in no way does she demand the renunciation of Western medicine. As a rule, however, she refuses to see anyone diagnosed with late-stage cancer.[22] This does not mean that Qin Chuan thinks that Chinese medicine alone is ineffective against cancer. Recall that Qin Chuan's path veered away from Western medicine when her father chose to treat a suspicious gallbladder mass with Chinese medicine. But if Qin Chuan considers Western medicine to be largely dispensable, why would she not accept a patient like Granny Lu? In this regard, Qin Chuan's comments regarding Dr. Sun Yibing's preferred clinical setting for treating cancer patients are revealing.

It turns out that Xiaofan tried to recruit Dr. Sun to sign a contract with YM but was unsuccessful even after rallying Qin Chuan in the effort of persuasion. Qin Chuan was not surprised by Dr. Sun's response, with which she empathized. In the following conversation, edited for brevity, Qin Chuan described their divergent points of view:

Xiaofan: I feel like Dr. Sun deliberately excludes himself from many things. He recognizes only one law, "I know there are plenty of pitfalls out there, so I refuse to walk."

Qin Chuan: He's very careful. The thing is you won't see efficacy very quickly on many of his patients. They are so gravely ill that it's not easy to bring them back.

[22] This does not mean that Teacher Qin doesn't treat conditions that might fall, by biomedical reckoning, on the spectrum of neoplastic or pre-neoplastic disorders, such as breast nodules and human papilloma virus infections.

Xiaofan: Why? If they have cancer already isn't it hard to find efficacious treatments anywhere? I feel like he could easily come out [of the establishment].

Qin Chuan: No, but if a single case goes wrong then no one will come to you. I'm very careful too. I never accept severely ill patients. I've spoken with him. It's not easy for him to come out. Cancer patients require many hospital equipment. They need regular checkups. What he uses is already all mixed up with Western medicine. He never uses acupuncture, only drugs and herbs. But I've spoken to him. If it's like Zheng'an [a private Chinese medicine franchise] and he only has to come out half a day in the week, he's open to that.

Qin Chuan is acutely cognizant of the dangers of treating advanced-stage cancer outside the hospital, even thought Xiaofan was quick to dismiss it, knowing that most cancers are terminal conditions in China. In other words, Qin Chuan acknowledges that for conditions like cancer, check-ups and even antagonistic treatments attacking the site of heteropathy are critical for the patient. But because the sort of medicine she practices refuses to take an antagonistic approach, she has to make an exception for cancer. Situated outside the establishment, however, the structure of exceptionality here is the inverse of locating cancer on a biological substratum of bare life to amass weapons that would wipe it out of existence. Rather, the exception Qin Chuan makes constitutes a temporary resolution that would enable structural transformation through a path of embodying an exemplary model of pure Chinese medicine. Only after she has extended a structure of exemplarity embodied by the cultivated few who could, like her father, endure great pains in the slow process of tuning to their malady with minimal recourse to antagonistic treatments, can she contemplate treating cancer with pure Chinese medicine.

It did not take long for Teacher Qin to be perceived as an example by her patients. The core service that YM offers is one-to-one consultation with respected physicians in the hospital for around 200 yuan per visit — about ten times the hospital's regular outpatient rate. Among the dozens of physicians who have signed contracts with Xiaofan and listed on YM, Qin Chuan was

the only one not currently an employee of a large public hospitals as well as the only one who practiced Chinese medicine. Xiaofan soon discovered that hospital-based physicians were less attractive matches compared with Teacher Qin. Her exceptionality as a lone Chinese medicine practitioner among a cast of Western medicine doctors, once a sign of marginality within the hospital, became a source of value on YM.

Teacher Qin's popularity might in part be due to the affordability of her services. Unlike her Western medicine colleagues, Teacher Qin charged only 30 yuan per consultation (excluding fees for acupuncture etc.), which is on par with the regular fee for seeing an expert clinician in the outpatient clinic of a public hospital. At least as important are the countless ways in which Teacher Qin stages her practice as a foil to the medicine of large hospitals. Where hospital doctors wearing white coats, Teacher Qin dresses herself and her assistants in colorful robes with mandarin collars. Where hospital doctors spend about five minutes in a busy outpatient clinic with patients, Teacher Qin takes thirty minutes largely listening to the patient's reported symptoms. Where hospital doctors routinely prescribe a large quantity of diagnostic tests before prescribing an equally large quantity of drugs, Teacher Qin palpates the patient's pulse with no interruption in their conversation and no additional tests, and prescribes drugs and treatments sparingly. Her clinical practice is thus non-isomorphic in nearly every apparent way with the medicine of large hospitals. Yet, her position "outside the establishment" also stages the exceptionality of her version of pure Chinese medicine as exemplary of what integrated medicine in the large hospital could potentially be.

Mei Zhan states from outset that her use of the phrase "outside the establishment" is not meant to imply a structural break between state and market, but to index "strategic orientation and differentiation" (Zhang 2016, 248). She is right to note that activities outside the

establishment, if taken to refer to a state/non-state or public/private binary, fails to reflect how "privatizing" ventures in China takes place within a state-mandated arena and depend on relational networks nurtured with patrons and partners inside the state establishment.[23] However, I venture to be a bit more specific about parsing strategic connections from structural change in delimiting what constitutes the *tizhi* or the establishment.

While Qin Chuan is careful to enact situation on the outside as an outsider, however informed, she is also careful not to reject norms found on the inside. For example, the price she adopts is closely matched with the state-designated price of outpatient encounters at large public hospitals. Moreover, most patients at Teacher Qin's clinic, many of them of the urban middle class capable of affording hospital-based services, appreciate her biomedicine credentials even if they act as if Western medicine is optional.[24] By deliberately staging[3] her practice as an exception, Qin Chuan avoids becoming the exception. If she has to temporarily make an exception for cancer, this is part of the exclusive interiority she maintains in order to move from a state of exceptionality toward embodying exemplarity.

When Agamben developed his famous structure of the exception as that of inclusive exclusion, he also placed it within the same logical system as the structure of the example

[23] Lisa Rofel (2015) noted that the private/public distinction is unhelpful in understanding Chinese capitalism, in which "private" or "people-run" (*minying*) enterprises are incorporated under state administration. John Osburg (2010) offered an insightful analysis of the imbrication of state and market at both micro and macroeconomic levels. As he noted, "moral economies of *guanxi* networks, rooted in kinship, bureaucratic hierarchies, and gendered alliances based on mutual aid, are at the very heart of "capitalist" development in China" (2010, 819).

[24] In the extreme, several of Teacher Qin's friends from University Hospital have become regular clients of her clinic, one of them even came after work with a bout of what appeared to resemble appendicitis. But her aversion to invasive treatments at the hospital was so strong that she'd rather wait it out at Teacher Qin's clinic.

constituted by exclusive inclusion.[25] While Agamben was far more reticent on historical correlates of exemplarity in social life, one can imagine that examples of exemplarity are not elusive. One might, for instance, examine the sovereign as the paradigmatic example that is the symmetrical inverse to the *homo sacer*. I suggest that more ubiquitous cases of exceptionality and exemplarity – and their interconversion – can also be found.

In the cases of Qin Chuan and Granny Lu, both were exceptional and exemplary at different phases of their trajectory. Granny Lu passed away in summer of 2017, three months after my surprise encounter with her on the integrated medicine ward of University Hospital. During what turned out to be her last admission, Dr. Sun told me that despite her hale appearance, her condition was dire. A fist-sized tumor was compressing her airway on her chest X-ray. Granny Lu stayed in Wuhan for two more months before she returned to her hometown of Yuxin, a small town in central Hubei where she worked as a schoolteacher for most of her life and where her younger brother still resides. She met and exceeded the two years that she had projected by several months. If she set out initially by submitting to antagonistic oncological treatments that placed her in a state of exception, she ended up embodying the example that she had hoped to become.

For them both, moving from a state of exception to embodying the example was premised on an infrastructure of state-led integration, without which Qin Chuan might indeed have become increasingly marginalized to the point of being excluded from the value chain of the public hospital. Implying no false consciousness or superstructure of a more deterministic

[25] Agamben (1998, 21) explains the symmetrical structures thus: "Exception and example constitute the two modes by which a set tries to found and maintain its own coherence. But while the exception is, as we saw, an *inclusive exclusion* (which thus serves to include what is excluded), the example instead functions as an *exclusive inclusion.*"

base, the distinction between outside and inside the establishment is thus better parsed through examining relations between localized structures and dispersed infrastructures from which structures emerge as local syntheses.

Emergent Syntheses

On the basis of a shared infrastructure, exceptionality and exemplarity transmute under carefully negotiated conditions. The contrast between Qin Chuan and Dr. Sun brings out the at times treacherous work of recalibrating exemplarity vis-a-vis exceptionality. Dr. Sun was cautious as ever about disclosing to me how he felt about YM, but he brought up the fact that state hospital employees entering the private sector, be it just dabbling or taking a full dive, is nothing new. Public servants have leveraged their positions into private profit for at least three decades since the 1980s.[26] Everyday practices of profiteering from patients, be they kickbacks for prescription drugs or under-the-table price gouging for routine procedures, exacerbated the structural opposition between patients and physicians during the market reforms of the 1980s (see Chapter 1). The breakdown in medical ethics have been roundly decried by scholars and critics both in China and overseas.[27] Their effects have been connected to a series widely publicized instances

[26] Both Dr. Sun and Qin Chuan vividly remember their colleagues leaving their underpaid but secure hospital position to work for pharmaceutical or nutritional supplement companies when they realized how fiscally distressed public hospitals had become in the early 1990s. See Meisner 1999: 474-479 on rise of an urban bourgeoisie taking advantage of post-Mao market reforms. After 1984, "bureaucratic capitalism" describes the vigorous pursuit of personal profit through price arbitrage and rent-seeking by those occupying strategic positions in the state bureaucracy.

[27] See Zhan (2011) for an anthropological perspective on the violence against doctors as a mutilation against humanity; He and Qin (2016) and Hesketh et al. (2012) analyze the rise in *yinao* or "medical disturbance from a policy perspective. Bai Jianfeng is a Chinese journalist who has written an opinion column for the *People's Daily*, the Chinese Communist Party's largest official newspaper, critiquing the adverse effects of health care reform on doctor-patient relations for over a decade. His essays collected in the 2011 *Doctor-Patient Relations with Chinese Characteristics* contains a preface from then minister of health, Chen Zhu.

of violence against physicians, reminiscent of a deductive form of biopolitical governance that would pit patients and doctors against each other as mortal enemies.

So it is no surprise that Dr. Sun wished to simply avoid overt displays of profiteering in public office, but Qin Chuan also suggested that Dr. Sun is not in principle opposed to working in private practice as long as it does not overlap or conflict with his hospital position. This would be difficult through YM given that it arranges concierge encounters in a space coextensive with the public hospital, with Teacher Qin again, being the exception. Fortuitous for her and for YM, they are riding a new wave of privatization in the 2010s. On the heel of a period of welfare extension and administrative restructuring, public hospital employees are encouraged to enter the private sector, paradoxically in order to shore up the public good.[28]

Starting in 1998, state reforms began to turn back the tide of health care liberalization beginning with implementing urban residency-based medical insurance (URBMI), followed in 2003 by county-level collective financing for the new rural cooperative medical program (NRCMP) (Eggleston 2012, 22). Insurance reforms were succeeded by comprehensive health sector reforms touching on every aspect of health care provisions including drug pricing, primary care implementation, medical education, establishing a national essential medications list and public hospital administration (Eggleston 2012; Yip et al. 2012). From 2009-2012, annual government spending on health care almost doubled from 480 billion to 840 billion yuan, expanding health insurance coverage to more than 96 percent of the population. By early 2017, the fifteen percent mark-up on drug prices was officially banned in state-run hospitals (Mao and Wang 2017). While impressive in the scope and rapidity of their rollout, reforms have not

[28] "The most striking announcement is the government's decision to promote private investment in the hospital sector, with the target of private hospitals reaching a 20 percent market share by 2015" (Yip 2014, 807).

fundamentally alleviated the financial pressures on patients, who are still held responsible for large portions of their medical bills.[29] For reasons I will allude to later, this is because the key pillar of reform that is supposed to reorganize the incentive structure of large public hospital and improve health care quality is at an impasse.

More recently, state has turned to inviting private investors (termed "social capital" in policy briefs) into the health care sector, basically encouraging them to break up the monopoly of public hospitals owned by provincial and local health bureaus. Between 2010 and 2015, civilian-run (*minying*) hospitals grew by 10 percent per year, in part due to quotas that prevented some public hospitals from expanding (Yip and Hsiao 2016, 806). A lack of technical talent and high prices remain major impasses for civilian-run hospitals to compete with state-run counterparts. In 2014, national regulations relaxed for physicians employed by public hospitals to work in institutions outside their primary work unit, legitimizing multi-sited employment in private hospitals, managed care organizations and physicians' group practices (National Family Planning and Health Council 2014). Health care workers moving "outside the establishment" has thus been orchestrated by central state policy as a way of re-organizing the flow of patients, physicians and capital. Yet, the sectoral monopoly of state-run hospitals remains firmly entrenched. At the end of 2016, civilian-run hospitals and clinics account for 56 percent of all hospitals in China, but a paltry 22 percent of medical services (Li 2017).

The civilian ventures that have sprung up around Chinese medicine fare better in competition against state-owned options in part because their operations can be disaggregated from the hospital. Even state policy-makers are poised to embrace non-medical modes of self-

[29] The reasons being that many medical services are not reimbursed by the state, especially imported devices and certain drugs. Under-insurance is an issue for rural residents. Hospital over-treatment can also quickly deplete insurance funds. See Hsiao (2014).

cultivation and life nurturing as primary care *cum* personal health management. As laid out by the State Council's *Healthy China 2030* plan, "By 2030, Chinese medicine will have a leading role in treating the not-yet ill (*zhi weibing*), a cooperative role in treating serious and complex illnesses, and a central role in rehabilitative medicine."[30] Such policies validate the boom in private ventures in traditional medicine as a chapter in state-led policies of medical integration.

Take the Zheng'an franchise Teacher Qin mentioned, which launched in Beijing in 2009 and has since licensed eleven clinics in seven cities across China.[31] When its Wuhan location opened in 2017, Teacher Qin started holding one clinic session there per week. Like the entrepreneurs promoting classical medicine (*gudian zhongyi*) whom Mei Zhan followed, Zheng'an has gathered within its network of clinics and academies Chinese medicine practitioners who ostensibly depart from the standard theories and models of post-1950 Traditional Chinese Medicine (TCM). But clinicians like Qin Chuan might be animated as much

[30] See the State Council's (2016) *Healthy China 2030 Planning Guidelines*, which lists as one of four central principles "scientific development" with core components of "prevention first, integration of prevention and treatment, equal emphasis on Chinese and Western medicine and transformation of health service models." The plan for Chinese medicine specifically entails "heavily develop non-pharmacological Chinese medicine, enabling it to realize its unique effects in common, endemic and chronic illnesses…build up a Chinese medical and health maintenance service system that covers urban and rural areas. By 2030, Chinese medicine will have a leading role in treating the not-yet ill [*zhi weibing*], a cooperative role in treating serious and complex illnesses, and a central role in rehabilitative medicine."

[31] The company's origin myth unfolds around its charismatic founder, Liang Dong, a media personality formerly employed by Phoenix Television and has served as a vice president for the tech giant Baidu. A series of personal incidents led him on a journey of self-discovery with enough twists and turns for a *wuxia* romance, including becoming the disciple of Deng Tietao (1916-2019), a renowned Chinese medicine physician at GUCM and one of the first Master Physician of National Medicine (Liang 2016). Zheng'an is conceived to not only be a clinical institution but to also serve as a media platform for educating and promoting "classical medicine," at a steep fee for its bourgeois clientele. Teacher Qin's standard consultation fee at Zheng'an was 200 yuan in contrast to the 30 yuan she charged at her own clinic.

by wariness toward state ideology as alignment with a central government-endorsed reform agenda to curtail the virtual monopoly of large hospitals.

While YM may never reach the same scope as Zheng'an, Xiaofan is quite cognizant of how her enterprise conforms to and even preempts the state's reform agenda. Xiaofan is careful to brands YM as an intermediary between a surfeit patients looking for trustworthy doctors and far fewer physicians-of-repute accessible only behind long queues and labyrinthine state bureaucracy. In doing so, Xiaofan has to be careful not to present YM as a competitor to state hospitals, even though its niche falls more in line with the central government's integrative policies than the hospital's interests. To navigate the public infrastructure of private encounters, Xiaofan has had to cultivate relations with hospital cadres and senior physicians from her former department. For now, she has even garnered the approval of the current party secretary of University Hospital, the highest-ranking administrative official who happens to be Xiaofan's former thesis advisor. In their efforts to produce an exemplary model of clinical encounters, Xiaofan and Teacher Qin remain firmly embedded in an infrastructure of integration.

The pragmatics of implementing central state policies inevitably rest on local interpretation. The State Council's Health Reform Office signs accountability agreements with provincial governments, through which tasks are delegated to lower-level agencies. The performance evaluation of bureaucrats, including such measurable metrics as the local rate of health insurance enrollment, can become the basis of promotion. However, restructuring the ownership of large government-owned hospitals yields no simple metric (Eggleston 2012, 24). Since the central government has relinquished fiscal stakes in public hospitals from the 1980s onwards when its subsidies fell under 10 percent of hospital revenues, it has little financial leverage to regulate the conduct of clinicians at large hospitals. With complex interests and large

financial flows at stake, local bureaucrats and party cadres may perceive more risks with mis-stepping than long-term reward from bold initiatives.

A great deal of the political anthropology on China has focused on how the Chinese Communist Party's structure and ideology might condition local agents (Xiang 2013; Pieke 2004; Osburg 2013). Influenced by the works of Bourdieu, Frank Pieke's analysis of how an idealized structure of vertically integrated state bureaucracy impinge on local governance in a Yunnan village are among the more nuanced (Pieke 2004). According to Pieke, political structures including the administrative hierarchy among party cadres engender local *habitus* with attendant epistemic assumptions that redirects top-down change.[32] Such a view of *habitus* helps bring out how a hegemonic state is configured in local discursive practices and may be vulnerable to the inertia of local habits. But it fails to explain how Xiaofan and Teacher Qin, for instance, might make bold departures in tandem with discovering support from central state policy. A trickier question is accounting for the "doxic submission of the dominated to the structures of a social order" that Bourdieu described operating at a pre-reflexive level of embodied dispositions (Bourdieu 1994, 14). But taking Bourdieu to imply a literal understanding of state bureaucracy structuring discourses and expectations does not account for the diversity of competing ideologies and their local interpolations. Assuming that Teacher Qin has internalized the structural schematics of integrated medicine and falls back on relying on the Western medicine she rejected when confronted with the possibility of treating advanced-stage cancer, does she do so out of a pre-reflexive *doxa* or cynical risk aversion?

[32] Even as national legislation in 1998 made village elections mandatory, local institutional change took place within the grooves of historical experience. Pieke's (2004, 530) examples include party cadres reflexively draw on state discourses of development that hold coastal cities as models to be germane to justifying how local economic development has stalled. However, little of this pertains to embodied *habitus*.

Rather than positing pre-cognitive structures or *habitus* as the site of *doxic* naturalization,[33] I suggest that *habitus* can be more productively interpreted as infrastructures, in that their ongoing operations are ordinarily below the threshold of collective perception. As the works of Susan Leigh Star and collaborators have shown, the perceptual transparency of infrastructures are critical in sustaining a pre-reflexive sense of business as usual.[34] Yet, it is also a key feature of infrastructures that different social groups are more or less sensitized to the effects of infrastructural breakdown, forming a differential field of embodied habits and perspectives. Communities of practitioners permanently engaged in maintaining a specific infrastructure have lower thresholds of sensitivity to its regular operations and higher tolerance to its breakdown, both sine qua none of membership in said community. If their collective *habitus* partly entails the embodied schemas cultivated through working with and within infrastructures, implying that infrastructure is just another name for *doxa,* such a *habitus* need not be pre-reflexive to the point of misapprehension or paralysis in the face of breakdown.

[33] Even though Bourdieu (1994, 14) was careful to define *habitus* as a generative grammar that defies reduction to trans-historical structures or cognitive maps, *doxa* is an unwieldy concept that partly warrants its critique of constraining agency to structural determination. See Throop and Murphy (2002) for a phenomenological critique of Bourdieu's phenomenology.

[34] The reader might protest that "integrated medicine" is not reducible to the kinds of classificatory systems that made up the bulk of Bowker and Star's examples of infrastructures. Indeed, Bowker and Star's examples were large-scale information systems such as the ICD (International Statistical Classification of Diseases and Related Health Problem) encoding diseases recognized by the World Health Organization to both describe past practices and inscribe ongoing ones. But classification entails far more than a formal exercise of putting things into categories; it is a pragmatic process that includes all kinds of informal practices such as filling in insurance claims and death certificates. Because large scale infrastructures necessarily "embody a dynamic compromise" (Bowker and Star 2000, 55), Star et al. are keenly aware that "one person's infrastructure maybe another's barrier" (Bowker and Star 2000, 34). See also Star and Ruhleder (1996).

I find it useful to think of infrastructure as a mobile, multi-level scaffolding over which the localized breakdown of any tier reveals a historical substratum (i.e. both stage$_2$ and stage$_4$).[35] Within the infrastructure, locales quite proximate to the point of breakdown might still be operating with relative transparency. Indeed, infrastructures never operate with equal transparency everywhere. But the event of failure can precipitate an opening that unsettles established social and spatial hierarchies usually maintained by the imperceptive operations of the infrastructure. It is the juxtaposition of the transparency of infrastructure as both the concrete example and background that local openings can be experienced as an inversion. By the same token, local inversions against an infrastructural background brings about, at least locally, a sense of the transience of hitherto transparently accepted norms and habits. Temporarily, shared presuppositions of infrastructural transparency might be swept aside to reveal a temporary arena for staging$_3$ emergent syntheses. These stagings$_3$ can culminate in violence, in which a structure of exceptionality configuring a part of the social body as subject to exclusion. But even then, an epistemic and organizational vacuum is not usually revealed. Instead, localized moments of inversion can unearth the hidden procedures and secret foibles that goes into everyday infrastructural maintenance, drawing them into a new orientation that is nevertheless differentiated from the generalized background infrastructure.[36] This view of the mutual

[35] Scheid's (2002, 27-64) exposition of an intrinsically pluralistic infrastructure as "fields of practices in which agencies compete with each other for inclusion into given practices" is close to what I'm thinking of. He collates insights from STS, Derridean deconstruction and the Neo-Confucian philosophy of Zhu Xi to sensitize anthropology to the incessantly transformative relationship between fields of practice and the emergence and disappearance of local agencies, or what he calls infrastructural synthesis.

[36] Applying a procedure they call "infrastructural inversion," Bowker and Star dramatically stage the ongoing processes of infrastructural maintenance and denaturalize the *habitus* of specialists charged with making routine revisions. But they also note that these infrastructures break down with sufficient regularity such that no single social group holds monopoly over revising their

transformation of (localized) structure and infrastructure through infrastructural synthesis avoids the twin traps of a deterministic doxa or unencumbered subjects. Events of infrastructural inversion can even produce a rearticulated awareness through which actors, objects and processes spontaneously realign as if animated by a structuring field of practices. This realignment is, however, a reassembling around the event of inversion through recourse to a newly visible infrastructural substratum mobilized in service of local resolution. Exceptional moments of breakdown could then become the mainsprings of exemplary enactments.

For example, Qin Chuan and Xiaofan's bond formed when Xiaofan's newborn child came down with a fever while she was still a resident at University Hospital. In retelling the story, Xiaofan recalls her epiphany that all of her training has not made her into an efficacious healer when it mattered. "Other than interpreting some lab values, I have learned nothing!" A health care establishment that ought to enable a doctor's child to quickly recover from a fever and for a medical trainee to become a healer revealed its localized breakdown. Teacher Qin treated Xiaofan's son with several doses of herbal medicines which broke a fever that a week of inpatient antibiotics couldn't break, turning a moment of breakdown to bring out the remedial salience of Chinese medicine. Henceforth, Xiaofan made a habit of consulting Teacher Qin for health advice for family and friends, inaugurating a partnership that a few years later led to her founding YM. Their subsequent efforts to remake the conditions of clinical encounters by

---

standards and schematics. Based on his ethnography on rice irrigation in Thailand, Morita (2017, 739-741) points out in the context of a premodern infrastructure of rice irrigation in Thailand, infrastructural inversion describes the traveler's (including ethnographer's) stance of discovery an unfamiliar landscape that approximates the stance of those most proximate to its more erratic behavior. For those proximate or vulnerable to the effects of infrastructural disruption, which for Morita included Thai rice farmers and urban residents affected by flooding and hydrology engineers redesigning an irrigation system, moments of inversion are epistemically laden events that can reorient attention around otherwise implicit dimensions of human and non-human relations converging upon a shared environment.

drawing heavily on the intellectual and practical resources of both Chinese medicine and the large hospital is hence not a departure from a temporarily inverted infrastructure, but a process of reassembling buried infrastructural potential toward constructing exemplary elements. The prepositions "inside" and "outside" qualifying the medical establishment might be more indicative of localized infrastructural breakdown and structural change than cultivated cynicism or exhaustion towards state-sanctioned discourses (Zhan 2016, 258-9).

The composition of case records in accordance with *fuzheng quxie* exemplifies an acute sensitivity to infrastructural inversion. For centuries, the case record has been a preferred genre reminding clinicians that while it might be expedient to attack the local lesion or superficial symptom, deeper and more dispersed processes are usually mediating the manifest illness and have to be concomitantly addressed. Charlotte Furth described the style of argumentation in Ming and Qing Dynasty case histories as a play of structural depth, in which presenting cases can show a deep pattern of differences underlying superficial similarities or deep similarities masked by superficial differences (Furth 2007, 146). Whether they are succinct exegesis of a single prescription or a detailed analysis of a series of encounters, recursive inversion of depth and surface are usually in order. In modern case records of Chinese medical oncology, infrastructural inversion is built in as each formula iteratively shifts the fulcrum between inverse strategies of attacking and bolstering. These counter-balancing acts have no telos except the sequential inversions that fundamentally historicizes efficacy, staging$_2$ it in stages$_4$, as it were.

This chapter has itself been staged as a dialogue between two cases. By staging Qin Chuan and Granny Lu not as ethnographic subjects with a conceptual payoff per se, I hope to have rendered it possible to follow their diverging and converging trajectories for escaping the orbits of exceptionality. I use "stage" here in all the senses explored in the dissertation thus far

— a procedure, a place, an enactment and a temporal process – so that we might enter, inhabit and exit the large hospital as a site of movement and contestation beyond its bureaucratic strictures.

In a chronically topsy-turvy health care establishment, infrastructural inversion may be the only way for a patient to resist the advance of illness on her own terms and for a doctor to fulfill her moral duty to not overburden her patient with excessive treatments. If Qin Chuan's departure did not directly resolve the structural contradictions and infrastructural breakdown that compelled Granny Lu to rely excessively on Western medicine before turning to pure Chinese medicine, traffic to large hospitals might nevertheless be quietly diverted as her clinic expands. To stay in the vein of Hu Kaiwen's metaphor, stagings of pure Chinese medicine might begin to break up the congestion inside large hospitals. Short of excising the site of congestion itself, one can expect no more potent strategies for infrastructural change.

CONCLUSION

Walter Benjamin famously compared the task of the translator to finding complementarity in the plurality of languages as "fragments of a vessel which are to be glued together [that] must match one another in the smallest details, although they need not be like one another" (Benjamin 2000 [1923], 21). In keeping with this view of translation as a practice, complementarity between words, discourses and objects are not ready-made, but are broken apart and refashioned repeatedly.

Treating practices that shuttle constantly between Chinese and Western medicine in and beyond the Chinese hospital, I have tried to capture integration as a transmedical practice in a similar vein as how translation can be understood as translingual practice (Liu 1995). As Benjamin might have encouraged, my translations of stage (*wutai* or *jieduan*) and staging (*shangyan* or *fenqi*) through their transmedical correlates have had little to do with the preservation of fidelity, focusing instead on the search for a more complete and adequate response to the task of translation. In this, I hope to have worked for a while alongside the clinicians and patients who likewise were more concerned about the possibility of efficacy achieved through piecing together the imperfect fragments of available resources in the diagnosis and treatment of cancer. As Derrida wrote of the unity envisaged in Benjamin's metaphor of the vessel lovingly pieced together, "It is perhaps not a whole, but it is an aggregate in which openness should not contradict unity" (Derrida 1985, 190).

Stretching the metaphor a bit further, the infrastructure of integrated medicine might be compared to a vessel pieced together, retaining an open unity while intersecting with and overlapping other infrastructures including but not limited to the Chinese hospital, global clinical trials, TNM staging, and state medical insurance. Where they intersect, cracks open and the

contents of one might spill over from their regular territories, muddying taken-for-granted assumptions.

Indeed, the sudden shifts in the optic integrity of infrastructures during moments of infrastructural inversion have proved to be useful openings for social scientific inquiries into infrastructures. Attending to the differential visibility of infrastructures to their users and occupants crucially informed my manner of occupying the intersecting infrastructures of the Chinese hospital and integrated medicine in relation to my interlocutors. These openings moreover led to a deeper appreciation for the unresolved contradictions and emergent syntheses that infrastructures potentiate. Each of the chapters tried to follow different these contradictions and syntheses through their various phases and places in cancer treatment.

Setting the stage[4] or *wutai* of integration, the first chapter described the case of Elder Kang and Dr. Sun to show the difference between integrated medicine and biomedical oncology in terms of their preferred spaces of clinical action, while complicating the usual binaries attributed to these spaces. While the outpatient clinic is assumed by patients, clinicians and scholars to be Chinese medicine's preferred site of action, I showed how the *menzhen* or "examination at the threshold" is constituted as a mode of encounter that regularly takes place on the inpatient ward and links patients to the inpatient regions of the hospital. As post-Mao economic developments converge with a historic health transition marked by a high burden of chronic diseases of aging, inpatient hospitals have become centers of fixed capital investment routinely enabling the high-tech treatment of these diseases. The bed then not only becomes a generic setting for medical interventions but also a device for accumulating value disproportionately generated by patients undergoing treatments of partially examined efficacy. As the structural priority between the efficacy and the productivity of a medical intervention

inverts such that productivity can accrue without efficacy even at the individual level, to enter into the hospital for "embedded" treatment can become a high-stakes gamble for patients. The outpatient threshold of Chinese medicine, however, distributes the epistemic operations of diagnosis and treatment over a sequence of episodes, deescalating the stakes of each episode while enacting efficacy in stages$_2$. Such encounters may devalue the inpatient bed of Chinese medicine vis-à-vis Western medicine departments, but they also partially restore the priority of efficacy over productivity, as Elder Kang later found over repeated hospitalizations.

At the same time, the top oncologists at University Hospital have preferred to recede from the outpatient threshold of examination and concentrate on cultivating their ecumenical discipline within growing inpatient towers. As the technical operations of cancer staging$_1$ (*fenqi*) upheld by oncologists at University Hospital harmonize local practices with global standards for diagnosing cancer and tracking treatment outcomes, these operations constitute their object as the malignant tumor that can be excised from the patient. While the stage$_1$ of cancer remains a relatively technical object of actuarial calculation, the stage$_2$ (*jieduan*) of cancer treatment is invariably the shared focus for clinicians, patients, and their families embarking on prolonged treatment trajectories.

Context-dependent, spatially distanciated references to stage$_1$ (*fenqi*) or stage$_2$ (*jieduan*) without frequent, explicit articulation of the relation between the two thus creates a disjuncture between the indexical grounds shared among clinicians and with patients. This deictic disjuncture becomes apparent during occasional confrontations that cross it. If this disjuncture is maintained by oncologists regularly receding beyond patients' views to refer to the tumor in isolation from patients, patients also disperse from the cancer ward beyond the oncologists' reach to seek alternative and additional remedies. Negotiations across and around deictic disjunctures

thus eventually falls back on an infrastructure of integration; oncologists rely on it to keep patients on the cancer ward enduring toxic treatments and patients rely on it to recuperate once they depart.

Chapter 3 then explicitly turned to different stagings$_3$ (*shangyan*) of cancer as an object that explicitly contradicts its standardized staging$_1$ as the tumor excised by way of negating the necessity of the biopsy. Practices of blind ingestion, widespread among Chinese patients, submit the clinical trial protocols and practice standards of biomedical oncology to extemporaneous revision and adjustment. The regularity with which this practice takes place depends on a historical conjuncture of the global pharmaceutical trials, a biomedicine of risk management as well as institutionalized integrated medicine. In the interstices of these intersecting infrastructures, a niche emerges for mass science in its contemporary mass-mediated forms. The patient-directed practice of sourcing generic and gray-market targeted cancer drugs, sometimes painstakingly repackaged before ingestion, proves to be a local inversion of the highly regimented infrastructure of global pharmaceutical trials that introduced these drugs to the Chinese market in the first place. At the same time, the process of ingesting targeted cancer drugs in combination and sharing these varied and complex experiences within patient communities – in-person or online – draws on an existing infrastructure of integrated medicine. It finds unlikely allies among Chinese medicine physicians while reenacting the grassroots experimental collectives inaugurated during Mao-era projects of public health extension.

From an explicit valorization of staging$_3$ cancer as an illness process that unfolds through stages$_2$ (*jieduan*), I then turned to the salience of the stage$_2$ (*jieduan*) of cancer in the contemporary case records of Chinese medical oncology. A metapragmatics closely approximating what I have been calling infrastructural inversion is built into the iterative

enactment of efficacy through adjusting the diagnostic and analytical "pivot" between *fuzheng* or bolstering orthopathy and *quxie* or expelling heteropathy. Case records in Chinese medical oncology thus reveal a degree of comfort with frequent pragmatic inversions between aggressive and ameliorative therapies, between surface phenomenon and deep processes, and even between putatively Chinese and Western treatment strategies.

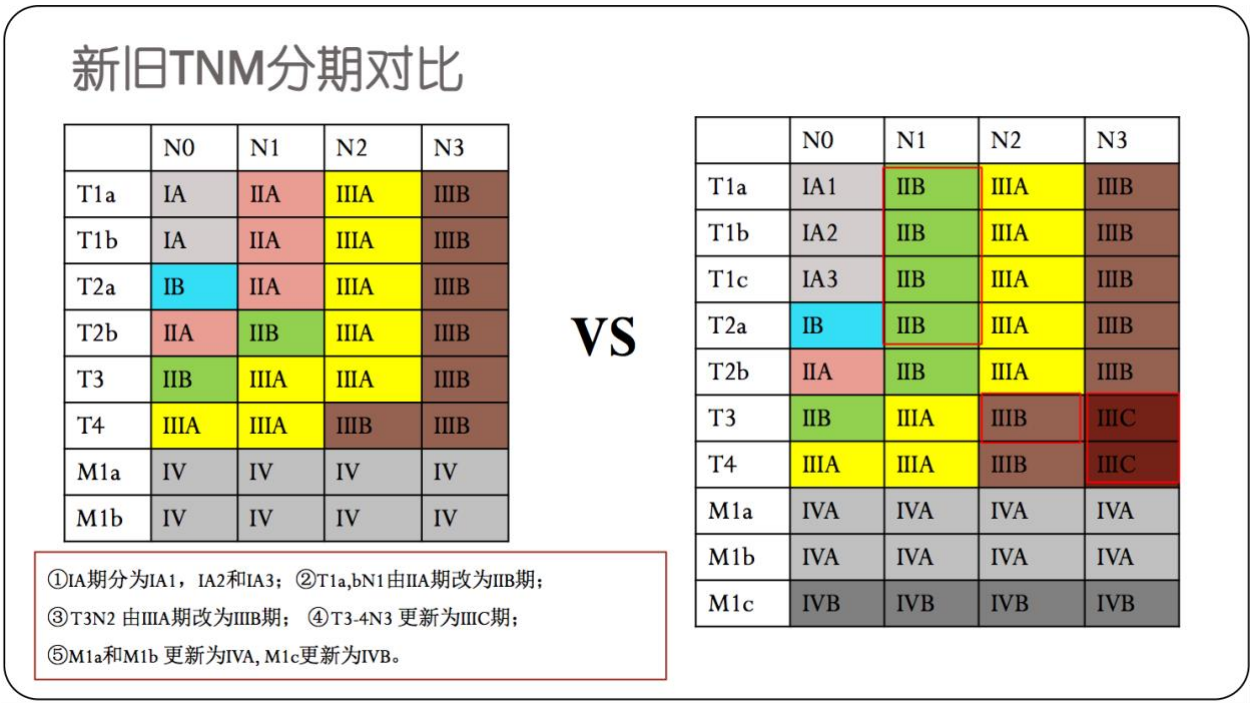
The applicability of this metapragmatics of inversion has widespread resonance for the vocational and avocational Chinese medicine practitioners who are at risk of being made exceptions by the expansionary moment of Western medicine across the Chinese health care establishment. Such risks have real consequences, be it as a patient exposed as "bare life" in the pursuit of antagonist treatments, as in the case of Granny Lu, or as a physician who has to extract value by treating patients as "bare life," as in the case of Qin Chuan. For those who turn to "pure" Chinese medicine, disavowal of Western medicine is never complete. Obligatory exceptions are made for the techniques and concepts of Western medicine. Pure Chinese medicine might then be best viewed as an infrastructural synthesis – as individuals embodying exemplary cases and case records personifying exemplary individuals. When these examples ripple across social media platforms, they reveal emergent infrastructural formations in the market of privatized Chinese medicine. Even in these singular distillations, an infrastructure of the state health establishment remains legible in the background, preserving difference even through synthesis. By this point, we have returned to the infrastructural stage$_1$ as a privileged site for enacting efficacy, now expanded significantly beyond the state hospital featured in Chapter 1.

Moving through these four translations of stage/staging has allowed me to focus on an infrastructure of integrated medicine in China as a dynamic and open unity. Insofar as unity takes the shape of openness, translation proscribes enclosure and invites languages and their worlds

into renewed signification. Efficacy emerges in the form of a conditioned question, provisionally defined and even anticipated, yet never settled once and for all. Whether or not a specific integrated treatment for cancer has worked, whether life has been extended or suffering alleviated, brings with it the quandaries of the entire history of Chinese medicine and medicine in China.

APPENDIX 1

Lung Cancer Staging Guidelines



	N0	N1	N2	N3
T1a	IA	IIA	IIIA	IIIB
T1b	IA	IIA	IIIA	IIIB
T2a	IB	IIA	IIIA	IIIB
T2b	IIA	IIB	IIIA	IIIB
T3	IIB	IIIA	IIIA	IIIB
T4	IIIA	IIIA	IIIB	IIIB
M1a	IV	IV	IV	IV
M1b	IV	IV	IV	IV

	N0	N1	N2	N3
T1a	IA1	IIB	IIIA	IIIB
T1b	IA2	IIB	IIIA	IIIB
T1c	IA3	IIB	IIIA	IIIB
T2a	IB	IIB	IIIA	IIIB
T2b	IIA	IIB	IIIA	IIIB
T3	IIB	IIIA	IIIB	IIIC
T4	IIIA	IIIA	IIIB	IIIC
M1a	IVA	IVA	IVA	IVA
M1b	IVA	IVA	IVA	IVA
M1c	IVB	IVB	IVB	IVB

Figure 2: 7th and 8th Editions AJCC/UICC Lung Adenocarcinoma Stages

Taken from the slides Dr. Yang sent me comparing the 7th (left) and 8th (right) edition AJCC/UICC guidelines for TNM staging for lung cancer. See UICC (2009) and UICC (2016).

T (Primary Tumor)		Label
T0	No primary tumor	
Tis	Carcinoma in situ (Squamous or Adenocarcinoma)	Tis
T1	Tumor ≤3 cm,	
T1a(mi)	Minimally Invasive Adenocarcinoma	T1a *(mi)*
T1a	Superficial spreading tumor in central airways[a]	T1a *SS*
T1a	Tumor ≤1 cm	T1a *≤1*
T1b	Tumor >1 but ≤2 cm	T1b *>1-2*
T1c	Tumor >2 but ≤3 cm	T1c *>2-3*
T2	Tumor >3 but ≤5 cm or tumor involving:	
	visceral pleura[b],	T2 *Visc Pl*
	main bronchus (not carina), atelectasis to hilum[b]	T2 *Centr*
T2a	Tumor >3 but ≤4 cm	T2a *>3-4*
T2b	Tumor >4 but ≤5 cm	T2b *>4-5*
T3	Tumor >5 but ≤7 cm	T3 *>5--7*
	or invading chest wall, pericardium, phrenic nerve	T3 *Inv*
	or separate tumor nodule(s) in the same lobe	T3 *Satell*
T4	Tumor >7 cm	T4 *>7*
	or tumor invading: mediastinum, diaphragm, heart, great vessels, recurrent laryngeal nerve, carina, trachea, esophagus, spine;	T4 *Inv*
	or tumor nodule(s) in a different ipsilateral lobe	T4 *Ipsi Nod*
N (Regional Lymph Nodes)		
N0	No regional node metastasis	
N1	Metastasis in ipsilateral pulmonary or hilar nodes	
N2	Metastasis in ipsilateral mediastinal/subcarinal nodes	
N3	Metastasis in contralateral mediastinal/hilar, or supraclavicular nodes	
M (Distant Metastasis)		
M0	No distant metastasis	
M1a	Malignant pleural/pericardial effusion[c] or pleural /pericardial nodules	M1a *Pl Dissem*
	or separate tumor nodule(s) in a contralateral lobe;	M1a *Contr Nod*
M1b	Single extrathoracic metastasis	M1b *Single*
M1c	Multiple extrathoracic metastases (1 or >1 organ)	M1c *Multi*

Figure 3: Detailed Breakdown of the AJCC/UICC 8th Edition TNM Stages

See Detterbeck et al. (2017, 195).

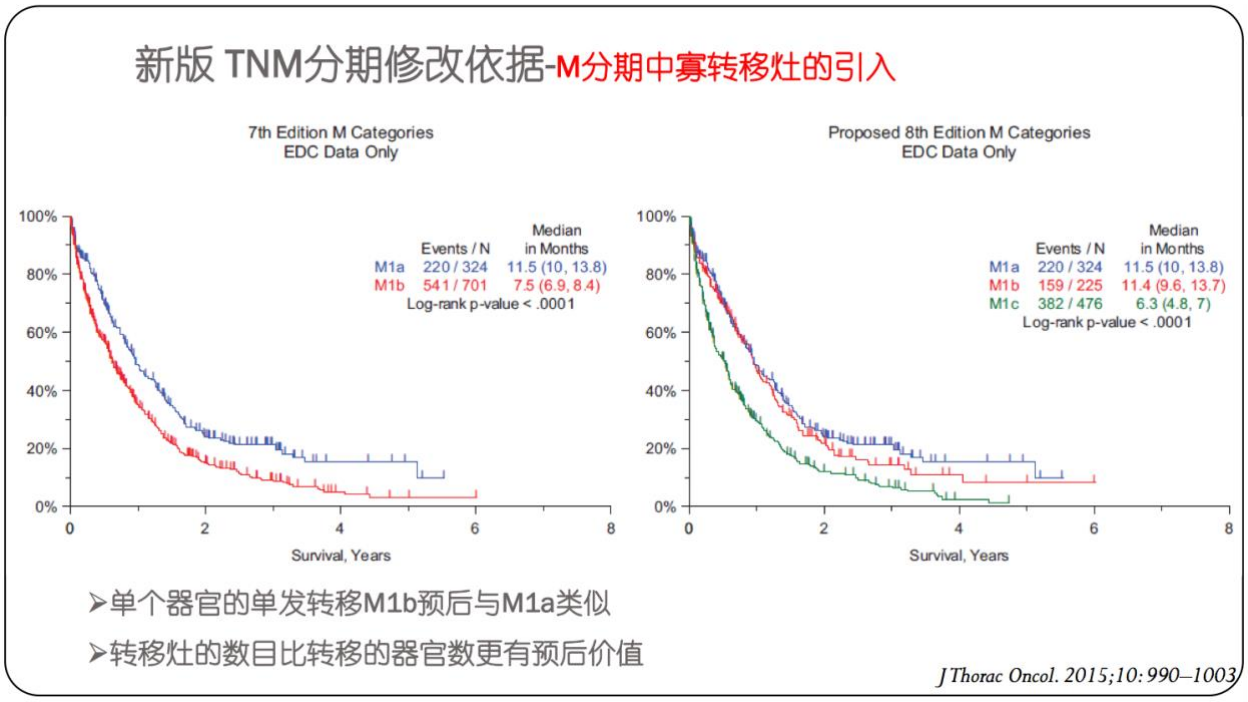
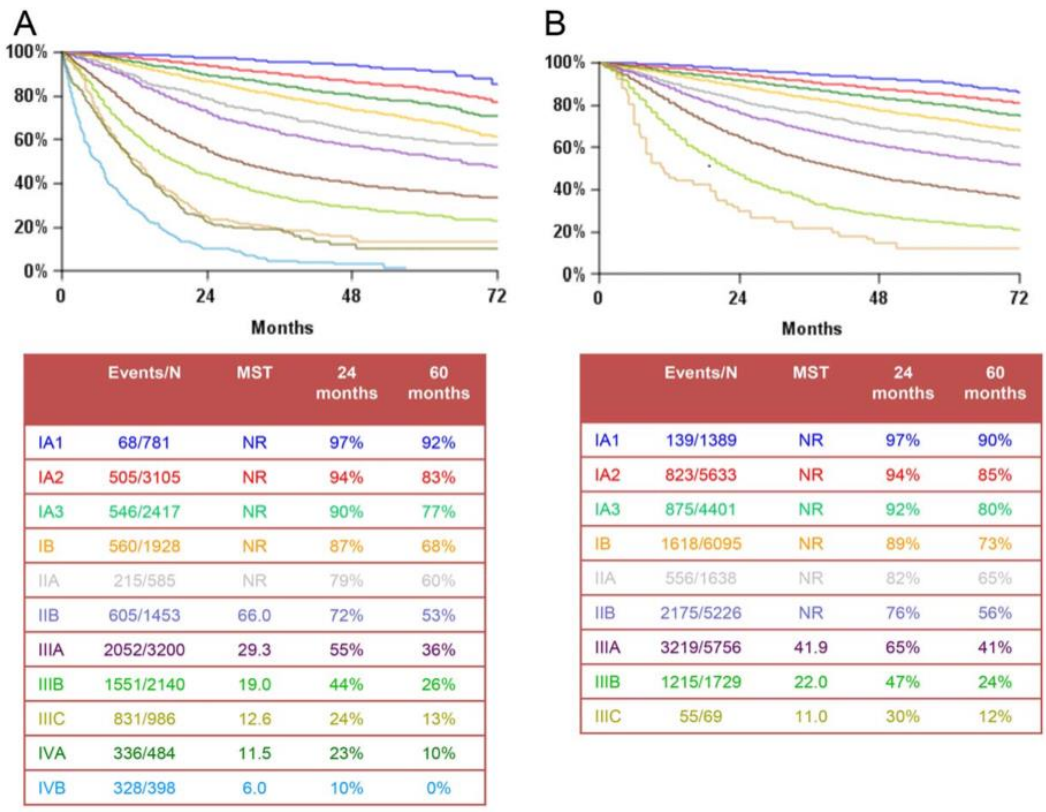


Figure 4: Kaplan-Meier Survival Curvers Comparing 7th and 8th Editions AJCC/UICC Lung Adenocarcinoma M Stages

Another slide from Dr. Yang's presentation showing survival curves according to M staging in the 7th and 8th edition guidelines. The first of the bottom two bullets says "the prognosis of M1b — solitary metastasis in a single organ — has a similar prognosis as stage M1a." The bottom bullet says "the number of metastasis has more prognostic value than the number of organs metastasized." Figures from Rami-Porta et al. (2015, 993).



	Events/N	MST	24 months	60 months
IA1	68/781	NR	97%	92%
IA2	505/3105	NR	94%	83%
IA3	546/2417	NR	90%	77%
IB	560/1928	NR	87%	68%
IIA	215/585	NR	79%	60%
IIB	605/1453	66.0	72%	53%
IIIA	2052/3200	29.3	55%	36%
IIIB	1551/2140	19.0	44%	26%
IIIC	831/986	12.6	24%	13%
IVA	336/484	11.5	23%	10%
IVB	328/398	6.0	10%	0%

	Events/N	MST	24 months	60 months
IA1	139/1389	NR	97%	90%
IA2	823/5633	NR	94%	85%
IA3	875/4401	NR	92%	80%
IB	1618/6095	NR	89%	73%
IIA	556/1638	NR	82%	65%
IIB	2175/5226	NR	76%	56%
IIIA	3219/5756	41.9	65%	41%
IIIB	1215/1729	22.0	47%	24%
IIIC	55/69	11.0	30%	12%

Figure 5: Kaplan-Meier Survival Curvers for the UICC/AJCC 8th Edition Lung Cancer Stages

Plot A assigns survival curves to the clinical stages of lung adenocarcinoma determined through imaging studies (CT, PET-CT, MRI, biopsy). This excludes surgical data for pathological staging that Plot B is constructed from. Because stage IV disease is metastatic, thus barring the possibility of a curative local intervention, data from surgical staging which could revise the clinical staging of localized disease is not included. See Rami-Porta et al. (2017, 146).

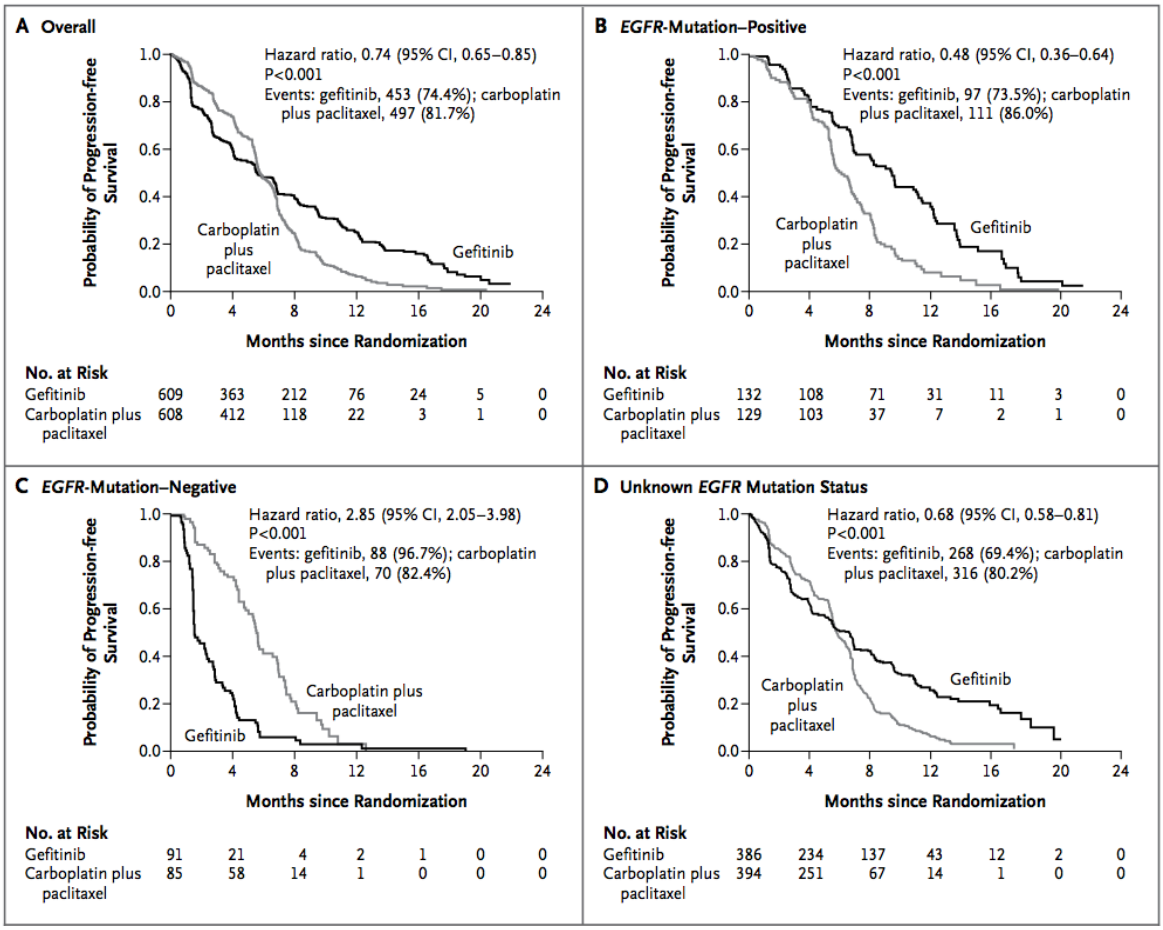


Figure 6: Kaplan-Meier Progression-Free Survival Curves Comparing Gefitinib and Carboplatin and Paclitaxel for Patients with and without EGFR Mutation

Progression-free survival curves in the IPASS trial are shown for the overall population (A), patients positive for EGFR mutation (B), patients negative for EGFR mutation (C) and patients with unknown mutation status (D). Note in particular that compared with Plot C, the black gefitinib curve in Plot B clearly exceeds the gray chemotherapy (carboplatin plus paclitaxel) curve in survival length. The patient's mutation status is thus considered critical in discriminating those for whom gefitinib may delay disease progression as opposed to platinum-based chemotherapy. See Mok et al. (2008, 953).

APPENDIX 2

The Case of Ms. Yang

The following case record is one of two cases at the end of the chapter on lung cancer in Piao Bingkui's *Collected Experiences*. Cancers of the lung is Piao's specialty. In the comments (*anyu*) that immediately follow the case record, it is described as a successful case of cancer treatment with "pure Chinese medicine" (*chun zhongyi*). Success on these terms is enabled by the patient's refusal in the "history" section of the opening narrative.

"Ms. Yang, female, 73 years old

First exam on November 7, 2000

Chief complaint: Intermittent choking cough for over 1 month 阵发性呛咳 1 个月余

History: Patient first started coughing after contracting a cold on September 12, 2000; no improvement after one week of oral medications. On September 20, 2000 at Beijing Fuxing Hospital, patient received a radiographic scan of the chest. Result: swollen mass on left upper lobe of the lung, size 3cmx3.5cm. A subsequent CT scan showed: swollen mass on the posterior portion of the left upper lobe, 40mmx39mm, left hilar and mediastinal lymphadenopathy, largest dimension measuring 17mmx13mm. Cancer cells found on sputum smear, type unclear. Patient is elderly and refused subsequent diagnostic tests, refused surgery, chemo and radiation and sought treatment at our hospital. Lab results: CEA 19.5ng/ml. Past medical history includes hypertension for 20 years, type 2 diabetes for 8 years, both well controlled by medications. No history of smoking.

Current symptoms: Intermittent choking cough, especially severe at night and in the morning; Dry mouth and viscous phlegm; low energy; sleep is poor with frequent dreams. Regular bowel

and bladder movements. Tongue quality is dry and slightly dark; tongue coating is thin and yellow. Pulse wiry and thin.

Chinese medicine diagnosis: Lung accumulation, pattern is Qi-Yin Dual Depletion, Phlegm-Poison Congealment and Accumulation

Western medicine diagnosis: Lung cancer (T2N2M0)

Treatment method: Replenish Qi and nourish Yin, dissolve phlegm and disperse knots, resolve toxins and disperse concretions

Prescription:

Herba scutellaria barbatae (barbat skullcap)	*banzhilian*	15g
Herba solanum lyratum (lyre-leaved nightshade)	*baiying*	12g
Rhizoma smilacis glabrae (glabrous greenbrier rhizome)	*tufuling*	12g
Rhizoma curcumae zedoariae (zedoray rhizome)	*ezhu*	9g
Bombyx batryticatus (body of infected silkworm)	*jiangcan*	12g
Trichosanthes kirilowii Maxim (whole mongolian snakegourd)	*quan gualou*	12g
Spica prunellae (selfheal fruit spike)	*xiakucao*	12g
Rhizoma atractylodis macrocephalae (atractylodes rhizome)	*baizhu*	15g
Radix pseudostellariae (false starwort root)	*taizishen*	15g
Radix astragali membranaceus (astralagus)	*huangqi*	30g
Semen coicis lachryma-jobi (coix seed)	*yiyiren*	12g
Fructus setariae germinatus (dried fried rice sprout)	*chao guya*	12g
Fructus hordei germinatus (dried fried barley sprout)	*chao maiya*	12g
Radix glycyrrhiza uralensis (licorice root)	*gancao*	6g

30 doses, once per day, decoct in water. Take by mouth with Concretion Softening Tumor Dispersing Tablet (*Ruanjian Xiaoliu Pian* 软坚消瘤片) and Bovine Bezoar Poison Dispersing Capsule (*Xihuang Jiedu Jiaonang* 西黄解毒胶囊)

Second exam on December 5, 2000

Cough was clearly alleviated, but blood streaks remain in phlegm, occasionally feels weak, a sense of heat stroke in the head, other symptoms like last time. Tongue quality is dark red, dry.

Pulse wiry and slippery. Pattern is Yin Depletion and Fire Blazing, Toxins Damaging Lung Tracts.

Prescription:

Herba scutellaria barbatae (barbat skullcap)	*banzhilian*	15g
Herba solanum lyratum (lyre-leaved nightshade)	*baiying*	12g
Rhizoma smilacis glabrae (glabrous greenbrier rhizome)	*tufuling*	12g
Herba agrimoniae (agrimonia herb)	*xianhecao*	12g
Rhizoma curcumae zedoariae (zedoray rhizome)	*ezhu*	9g
Bombyx batryticatus (body of infected silkworm)	*jiangcan*	12g
Trichosanthes kirilowii Maxim (whole mongolian snakegourd)	*quan gualou*	12g
Spica prunellae (selfheal fruit spike)	*xiakucao*	12g
Radix aucklandiae (costus root)	*baizhu*	15g
Radix pseudostellariae (false starwort root)	*taizishen*	15g
Radix astragali membranaceus (astralagus)	*huangqi*	30g
Semen coicis lachryma-jobi (coix seed)	*yiyiren*	12g
Rhizoma anemarrhenae (anemarrhena rhizome)	*zhimu*	12g
Fructus aurantii (bitter orange fruit)	*zhiqiao*	12g
Rhizoma dioscoreae (Chinese yam rhizome)	*shanyao*	10g
Fried "three immortals" (rice sprout, hawthorn, and medicated leaven)	*chao sanxian*	30g
Radix glycyrrhiza uralensis (licorice root)	*gancao*	6g

30 doses, once per day, decoct in water. Patent medicines as before.

Third exam on January 2, 2001

Self-reported lack of strength has improved; a small amount of sticky phlegm continues to be discharged, no bloody streaks, occasionally feels chest tightness and pain, throat dry and painful, appetite fine, bowel and bladder movements regular. Attempt toxin dissolving and tumor combating as main [principle] combined with bolstering orthopathy.

Herba scutellaria barbatae (barbat skullcap)	*banzhilian*	15g
Herba solanum lyratum (lyre-leaved nightshade)	*baiying*	12g
Bombyx batryticatus (body of infected silkworm)	*jiangcan*	12g
Scorpio (scorpion)	*quanxie*	3g
Scolopendra (centipede)	*wugong*	3*
Radix aucklandiae (costus root)	*baizhu*	15g
Radix astragali membranaceus (astralagus)	*huangqi*	30g

Radix scrofulariae (figwort root)	*xuanshen*	9g
Radix adenophorae (ladybell root)	*shashen*	9g
Fried "three immortals" (rice sprout, hawthorn, and medicated leaven)	*chao sanxian*	30g
Radix Glycyrrhiza Uralensis (licorice root)	*gancao*	6g

30 doses, once per day, decoct in water. Patent medicines as before.

* Centipedes are used whole so each decoction contains 3 centipedes.

Fourth exam

Patient persisted in taking medications based on the above formula with minor adjustments. On May 8, 2001, she went to Cancer Hospital of the Chinese Academy of Medical Science[1] for a checkup. CEA: 25.6ng/ml. Chest tightness and cough appeared; felt listless and sleepy, anxious heart and short of breath; dry mouth; bowel and bladder movements regular; tongue quality dark, tongue coat thin and white; pulse wiry, thin and slightly taut (略涩).

ECG showed: incomplete right bundle branch block, rate 98/min. Chest film showed a stable lesion. Pattern is phlegm toxin obstructing meridians, heart Qi depleted, therapy should resolve toxin and disperse phlegm, benefit Qi and nourish Heart.

Rhizoma curcumae zedoariae (zedoray rhizome)	*ezhu*	9g
Spica prunellae (selfheal fruit spike)	*xiakucao*	12g
Rhizoma atractylodis macrocephalae (atractylodes rhizome)	*baizhu*	15g
Radix pseudostellariae (false starwort root)	*taizishen*	12g
Radix astragali membranaceus (astralagus)	*huangqi*	30g
Rhizoma dioscoreae (Chinese yam rhizome)	*shanyao*	10g
Semen euryales (euryale seed)	*qianshi*	10g
Radix adenophorae (ladybell root)	*shashen*	9g
Radix platycodi (balloon flower root)	*jiegeng*	9g
Fructus aurantii (bitter orange fruit)	*zhiqiao*	12g
Pericarpium citri reticulatae (tangerine peel)	*chenpi*	9g
Semen pruni armeniacae (bitter apricot seed)	*xingren*	9g
Radix ophiopogonis (dwarf lilyturf tuber)	*maidong*	9g

[1] The Western medicine-oriented rival hospital of Guang'anmen Hospital in Beijing.

Rhizome pinelliae (pinellia rhizome)	*fa banxia*	9g
Cortex cinnamomi (cassia bark)	*rougui*	5g
Fried "three immortals" (rice sprout, hawthorn, and medicated leaven)	*chao sanxian*	30g
Radix glycyrrhiza uralensis (licorice root)	*gancao*	6g

15 doses, once per day, decoct in water. Patent medicines as before.

The above formula was taken during hospitalization in combination with *Kanglaite* [coix seed oil] and *Lanxiangxi* [elemene from *ezhu* extract] injections. Chemo-radiation was not performed. Two months later her cough disappeared and her condition stabilized. She was discharged with herbal medicines. Later, using methods of Qi Tonifying Yin Nourishing, Phlegm Dissolving Tract Opening, Poison Resolving and Hardness Softening. She persisted in taking Chinese medicine for over a year. Condition was stable. Eventually lost to follow-up."

***

The case begins by noting an important premise. Before she arrived at Guang'anmen Hospital, Ms. Yang, the patient had left the hospital where she was diagnosed with mid-stage lung cancer, stage T2N2M0 (IIIa), refusing additional testing. This meant that she more than likely refused to even consider surgery as a treatment option, even though the tumor, being confined to the chest, might have had a chance of being almost completely excised. It was Ms. Yang's resolve that gave Piao Bingkui the confidence to proceed without further testing.

Treatment commenced with the tumor in sight as a concrete target that had to be dissolved, but it is pattern differentiation which indicated specific therapies. Ms. Yang's dry tongue with a thin coating and insomnia point to underlying excess of Fire-Heat. Combined with a wiry pulse and low energy Qi-Yin dual depletion (气阴两虚), an especially dire pattern that can appear in some of the most. Piao is cautious about dispersing the concretion (or tumor) in the lung too aggressively. None of the drugs in the initial prescription are classifiably toxic.

According to the commentaries (*anyu*) at the end of the case, the fourteen drugs in this prescription can be loosely grouped into three interrelated treatment methods: drugs that *qingre jiedu* or clear heat and disperse toxins (1-3 in Prescription 1), disperse phlegm and dissolve lumps (4-7), and support orthopathy and activate Spleen (8-14). Drugs that 'clear heat and disperse toxins' target a locus of excess heteropathic heat without being specific to cancer. The abundance of phlegm in Ms. Yang's cough also indicates excess Dampness that has congealed into a concretion (listed under "*Chinese medicine diagnosis*"), so drugs from *ezhu* to *xiakucao* work to disperse phlegm and open up the lung tracts. In the third category, the first four drugs from *baizhu* to *yiyiren* are powerful bolstering drugs that strengthen the body's orthopathic defenses (frequently compared to immune-regulating). Fried rice sprouts and barley sprouts are everyday comestibles that support digestion. Here, the particular method of bolstering the orthopathic processes of Spleen and Stomach in the context of Lung malaise is convergent with an overarching principle of bolstering orthopathy. According to Five Phase Theory of Chinese medicine, the Spleen rules over the Lung in a cardinal network of five mutually influencing *yin* viscera; any depletion or repletion in one of the organs will have immediate upstream and downstream effect on the other.[2]

Of course, all these drugs are multiform and complex, working in concert to correct a doubtlessly more complex and multifactorial depletion. Licorice root (drug 14) for example is widely favored for moderating and balancing almost any formula, evenly bolstering the Spleen and moistening the Lung, and adds a sanguine hint to a bitter broth. Out of the four orthopathy

[2] If there is an excess or deficiency in one Viscera, all of the others will be adversely affected according to their position. Spleen and Lung correspond to Earth and Metal in the Five Phases and are thus contiguous visceral systems that immediately influence each other. The Spleen's role in digestion in this theory, or its capacity to transform food into nourishment, is moreover at the root of vitality; bolstering the Spleen and Stomach is crucial to overcoming any heteropathy.

bolstering drugs, *huangqi* is ubiquitous in states of cancer-induced depletion for replenishing orthopathic *qi*. But both *huangqi* and *yiyiren* are also diuretics, thus planting the seeds of an emergent contradiction in an otherwise mild prescription. Draining fluids may help clear away Dampness and dissolve congealed phlegm, which is a pattern of Ms. Yang's 'Lung accumulation.' But drain too vigorously and her already depleted Yin — which generates and encompasses all bodily fluids — might dry up further.

Yiyiren (coix seed), along with several other drugs in the formula, may in fact have been included for their anti-neoplastic as well as heat-clearing properties. Barbat skullcap (*banzhilian*), glabrous greenbrier rhizome (*tufuling*), zedoray rhizome (*ezhu*) and coix seed (*yiyiren*) are among dozens of Chinese *materia medica* shown to modulate immunes cells that induce cancer cell apoptosis. Taken together, few drugs in this formula directly replenish Yin with the exception of fluid-replenishing *taizhishen*, even though 'Qi-Yin Dual Depletion' is a pattern of Ms. Yang's illness.[3] While the commentaries are silent on this likely omission, it is plausible that anti-neoplastic drugs took the place of herbs that might have more directly addressed Yin depletion.[4] What might also have entered into the composition of this formula, which attempts to correct Qi-Yin Dual Depletion primarily through Qi bolstering drugs, is that the state of depletion was epitomized by heteropathic blood stasis and phlegm congealment that resist dispersive attack. To bolster too generous with *yin* replenishing drugs might collude with

[3] Elsewhere in the *Collected Experiences*, the editors mention that Piao favors using *tufuling* for patients with lung cancer because it is appropriate under rubrics of both pattern and disease differentiation.

[4] Even though prescriptions in Chinese medical oncology are often significantly larger than the three to thirteen flavors of herbs that typify a purist approach to classical formulas, there is a limit to how many drugs will abide symbiotically in a single prescription and that limit is usually quite unforgiving. I've seen Zhang Peiyu, a senior physician at Guang'anmen Hospital, list off herbs for a prescription transcribed and tallied by students. If the total comes out to be greater than thirteen, Zhang will usually go back through and eliminate a few flavors of drugs.

heat clearing drugs in the first half of the prescription and extinguish an already weakened *yang*. Close to evenly split between nourishing and dispersing drugs, the prescription as a whole gently bolsters orthopathy and moves digestion without neglecting the heteropathic concretion, yet cautiously recede from either a frontal assault or over-generous nourishing of Yin, while the possibility of anti-neoplastic treatment lurks in the background.

At the second exam, Ms. Yang's cough improved, but the buried contradiction has appeared in a position of primary importance. Heat stroke and a dark red tongue suggest that Yin Depletion from the previous exam has progressed to a state of pathological Dryness which could wreak havoc. The channels that lead to her Lungs are still not cleared of cancer toxins. But for now, the most urgent task is to quench Fire and nourish Yin. Anemarrhena rhizome (*zhimu*) — it a very bitter herb considered 'cold' in nature and powerfully nourishes Yin — is added at the upper end of the usual dose range. If used in overabundance, it can impair Yang. With a few revisions, the orthopathy supporting (*fuzheng*) and Spleen-Stomach replenishing style of the prescription remains unchanged. Depletion is prioritized as the deeper root of a more superficial concretion (i.e. the tumor). This spatiotemporal relation of depth to surface will later invert.

Those familiar with the sequential play between orthopathy supporting and heteropathy dispelling will not be surprised to find that the instant Ms. Yang showed signs of strengthening after two months of orthopathy bolstering, the prescription takes an abrupt turn. The pattern in the third encounter is unnamed, perhaps because the treatment method is more than apparent from the formula: a short list of drugs that features toxic scorpion and centipede. The method of "attacking poison with poison" (*yidu gongdu*), well-known in external medicine as well as popular and folk healing practices, is the clear strategy. The burden of dispersing concretion shifts from relatively mild heat clearing drugs primarily working on breaking blockages in the

yang circulatory tracts and the six *yang* viscera closer to the body's surface to insect-based drugs that work on dispersing deeper, more ingrained Blood stasis in the *yin* viscera.[5] The main thrust of the third formula is conveyed by the toxic drugs taking aim at a concretion, which has now become the main problem, while orthopathy bolstering drugs have been thinned out.

Up until now, the tumor has been treated as a problem superficial to a deeper condition of depletion, reflected in the relative mildness of Heat-clearing drugs. Having carefully differentiated the patterns of Qi, Blood and Phlegm stasis that contribute to the "Lung accumulation" (*fei ji*) gave Piao the confidence to apply toxic medicaments that would not have been justified at the initial encounter, considering that the depth of Ms. Yang's weakened state was plumbed only when typically non-toxic drugs exacerbated a pattern of depletion. Unlike his Western medical oncology colleagues who may have administered a standard dose of chemo drugs up front, only after orthopathy bolstering provisionally allayed Ms. Yang's depletion did Piao unleash toxic drugs, still in combination with nourishing supplements.

Ms. Yang's 6-month checkup after initial diagnosis took place at the Cancer Hospital of CAMS. Going to the highest authority in Western medical oncology to evaluate the progress of her treatment at Guang'anmen Hospital displays notable but unexceptional canniness, for Chinese patients frequently compare results from multiple institutions to ensure that physicians are acting with principle. Western medicine hospitals are considered better equipped to diagnose diseases using high technologies. The significant rise in tumor marker level (CEA went up from 16.5ng/ml to 25.6ng/ml) is a disturbing sign of cancer cell replication. It is even possible that Ms. Yang grew anxious and listless after her CEA results so that an ECG and imaging studies were

[5] Some argue, placing priority on cancer toxins, that large doses of toxic drugs have to be used. Others oncologists favor using mainly nourishing drugs. Few would go as far as their Western medicine colleagues when prescribing large, continuous cycles of chemo.

also performed at the Cancer Hospital — the case does not specify. What is important is that she returned to Guang'anmen Hospital to seek further treatment.

The fourth herbal formula reflects perhaps the only unforeseen shift in therapeutic strategy. Ms. Yang's first hospitalization in six months was not pretext for continuing toxic treatments at greater intensity. She was not ostensibly admitted to be monitored for adverse reactions to a highly toxic treatment, as is done in biomedical oncology for patients starting a cycle of chemotherapy. If anything, toxic insect-based drugs are removed from the fourth prescription; in their place were added abundant Lung, Spleen and Kidney replenishing drugs.[6] This time, lady bell root (*shashen*), dwarf lily tuber (*maidong*) and false starwort root (*taizishen*) all nourish Yin, ensuring that transformation of Yin Depletion to Dryness is not precipitated again, as in the first two months of treatment. The strategy employed in the first and second encounter is here revived and elaborated while the tumor once again becomes superficial to radical depletion.

If the drugs Ms. Yang were taking actually became less toxic, why was she hospitalized? Likely out of two considerations. First, injections derived from *yiyiren* and *ezhu*, both heat-clearing and anti-neoplastic drugs used in the first two prescriptions, could be administered intravenously in the hospital. Injectable extracts derived Chinese *materia medica* and refined to varying degrees frequently used by Chinese and Western medicine oncologists alike, often to

[6] Drugs like Chinese yam rhizome (*shanyao*) and euryale seed (*qianshi*) are common foodstuff evenly replenishing Qi, Blood in the Yin Viscera. In concert with bitter orange fruit (*zhiqiao*) and tangerine peel (*chenpi*), the aim is again to support the Spleen in strengthening the Lung. Tangerine peel and pinellia rhizome (*fa banxia*) also form one version of the 'two matured herbs' in the "Two Matured Herbs Decoction" (*erchentang*) found in the Song Dynasty *Beneficial Formulas from the Taiping Imperial Pharmacy.* The decoction is still widely favored for dissolving phlegm. It is aided by the phlegm dissolving drugs bitter apricot seed (*xingren*), euryale seed (*qianshi*) and balloon flower root (*jiegeng*).

supplement or even replace cytotoxic chemotherapies.[7] At the same time, both *Kanglaite* and *Langxianxi* can also be thought of as patent Chinese medicines in a modern guise. I have so far refrained from commenting on the patent medicines that Ms. Yang had been taking from the first encounter with no documented pause. Chinese patent medicines usually contain the same herbs as well-known classical formulas or ingredients based on secret recipes passed down within a medical lineage or regional dispensary. Hospitals manufacture their own versions of patent medicines as institutional trademarks. *Xihuang jiedu jiaonang*, for example, is produced by Guang'anmen Hospital based on well-known 4-drug formula for *Xihuangwan* 西黄丸 first recorded in Qing Dynasty physician Wang Weide's *Waike zhengzhi quansheng ji*.[8] Prefabricated into pills, capsules, powders or pastes but also lower in dose than herbal decoctions, patient medicines are more portable and palatable alternatives to decoctions that have to be laboriously prepared every day and intermittently adjusted. The fact that patent medicines can be prescribed without regular adjustment contributes to their widespread popularity for long term ingestion. Many Western medicine oncologists will prescribe them as well, usually to treat a variety of side-effects associated with chemo and radiation.[9] Chinese medicine doctors would be quick to warn that patent medicines too have to be prescribed according to pattern differentiation and

[7] Examples include the highly toxic chemotherapeutic drug paclitaxel found in the bark of the Pacific as well as the Chinese yew (*hongdoushan*), another tumor-targeting herb that Chinese medicine oncologists include in their herbal formulas. The similarity is not lost on Zhejiang-based developers of *Kanglaite*, which has for years been trying to move the drug into phase II clinical trials in the U.S.

[8] The formula calls for bovine bezoar, an animal product which is very expensive if naturally sourced. The patent medicine made by Tongrentang costs a small fortune for a month-long supply. Guang'anmen version uses man-made bezoars, which makes the drug much more affordable.

[9] I've witnessed many Western medicine oncologists prescribe *Xihuangwan* to patients, usually at their request. Chinese medicine doctors will emphasize that no drug can be taken for a long time without alteration; consuming patent medicines indefinitely will surely lead to an eventual mismatch between the ever-changing illness pattern (*zheng*) and the unchanging medicine

should not be taken indefinitely. In Ms. Yang's case, they are counterbalanced by ever-changing herbal prescriptions that might offset any toxicity associated with long-term ingestion of patent medicines. Like the infantry in an assorted regiment, patent medicines can incur sustained but low-dose attack on the heteropathy.

The second consideration that brought Ms. Yang into the hospital is paradoxically the availability of chemotherapy and radiation. While account of the fourth encounter meaningfully notes that "Chemoradiation was not performed," this was in the context that its possibility was at least momentarily considered. Quite a number of patients on the inpatient ward of Guang'anmen Hospital *do* use chemotherapy and the hospital even has an old Cobalt-60 radiation therapy unit which was in the process of being replaced by a modern linear accelerate when I visited in mid-2017. Ms. Yang's rising CEA could have signaled alarm, blunted only by the a stable lesion shown in the chest scan. So what made Piao ultimately withhold chemoradiation?

An important ambiguity would not have escaped the attention of any Chinese medicine clinician. Taking highly toxic insect-based drugs for four continuous months is certainly not benign. Was the treatment dragged out too long so as to have precipitated Ms. Yang's chest tightness and heart weakness? Are these the effects of a heteropathy firmly lodged? To strictly separate the downstream effects of cancer from the adverse effects of therapy would not been clinically useful when two sources of heteropathy — the concrete accumulation and toxic treatments against it — are constantly interfering through unseen but spatiotemporally continuous processes. Ambiguity in causal relations is nimbly resolved by the ambivalence of therapeutic strategies synchronously pivoting between multiple diachronic trajectories.

APPENDIX 3

An Annotated Bibliography of Chinese Medical Oncology

Textbooks and Manuals

National Office for Cancer Prevention and Control at Ritan Hospital (ed). 1973. *Yu zhongliu bing zuodouzheng* [Combatting neoplastic diseases 与肿瘤病作斗争]. Beijing: Kexue chubanshe.

- Manual published during the Cultural Revolution with the explicit purpose of popular science education (*kepu*) on "neoplastic diseases" (*zhongliubing*)
- Around 150 pages and divided into seven chapters: (1) general overview, (2) causal factors and pathogenesis, (3) prevention, (4) diagnosis, (5) treatment, (6) common types of tumor in China, and (7) progress and direction in cancer prevention and treatment in China.
- Chapter (2) notably separates causal factors into internal (*neiyin*), which includes hormonal, nervous, genetic and immune factors, and external (*waiyin*), which includes environmental pollutants, radiation, chemical exposure and viruses. The language of internal and external causes is akin to the classification of disease causes codified in TCM textbooks, which also include the third category of *buneiwai*, or "neither external nor internal" that includes such factors as unhealthy habits and incidental injuries.
- Chapter (3) describes post-1958 nationwide cancer censuses, which examined over 6 million Chinese in 26 cities and provinces. After 1969, health care workers were sent down to Lin County of Henan Province with a high incidence of esophageal cancer to examine individual villagers rather than wait for them to appear at the doorstep of county clinics and hospitals. The percentage of early-stage cancer detected rose from 6.8 percent before the census to 81.4 percent afterwards (p. 65).

- The chapter on treatment briefly describes surgery, radiation then medical management. In the section on medical management, Chinese herbal medicines are described ahead of chemotherapies. Most of the herbs listed (e.g. *ezhu, haizao, yiren*) are still regularly used in clinic today.

Editorial Committee for Practical Oncology. 1978. *Shiyong zhongliu xue* [Practical Oncology 实用肿瘤学], vol I & II. Beijing: Renmin weisheng chubanshe.

- A two-volume, 1000-page, collectively edited comprehensive textbook on cancer biology, pathophysiology, prevention and treatment listing two dozen institutions in its editorial committee, including subsidiary institutions under the Chinese Academy of Medical Sciences (CAMS). Notably, two Chinese medicine hospitals are also involved, namely Guang'anmen Hospital and the Capital Medical University Beijing Hospital of Traditional Chinese Medicine.
- A place of prominence is reserved for Chinese medicine's role in cancer diagnostics and therapy in the section immediately after the general introduction, outlining common patterns and prescriptions associated with cancer.
- Chapters in volume 2 discuss the pathogenesis and treatment of specific cancers designated by organ system. Each chapter includes a subsection discussing Chinese medical approaches to treatment. Later works on integrated oncology hews close to this format of a theoretical introduction (including obligatory references to classical Chinese notions of tumor and cancer) followed by specific Chinese and Western treatments for each type of tumor sorted by biomedical organ systems.

Guo, Lin & Guangling Hou. (1980). *Xin qigong fangzhi aizheng fa* [A new qigong method for preventing and treating cancer 新气功防治癌症法]. Beijing: Renmin tiyu chubanshe.

- "Guo Lin Qigong" is an anti-tumor qigong exercise widely practiced in China and the Chinese diaspora. Guo Lin 郭林 (1909-1984) purports that she was diagnosed with cervical cancer in 1949 and suffered six operations; in the meantime, she modified the qigong she learned as a child into an anti-cancer technique. She eventually died of a stroke in her seventies. In the 1970s, when she started giving public lectures to disseminate her technique, she drew the attention of researchers at the Beijing Tuberculosis and Thoracic Tumor Research Institute, who tracked the disease course of over a hundred patients who utilized her method. She explicitly claims to be updating traditional qigong techniques, among which *Wu Qin Xi* ("Game of Five Creatures," attributed to Hua Tuo, a Three-Kingdoms era external medicine specialist of sagely renown) is emblematic, by drawing on Chinese medical pattern differentiation and Western anatomy. Referencing contemporaneous principles of integration, Guo Lin emphasizes different "stages" (*jieduan*) of treatment that requires the patient to temper and balance the cultivation of stillness (*jing*) and the activation of *qi* to attack the tumor (*dong*) rather than mechanically following the motions she describes (p. 28). Handou Jingshen (see Chapter 3) is a dedicated practitioner of Guo Lin Qigong and frequently shared his experiences on *Dances with Cancer*. Even though the prestige of qigong waxed and waned during the 1990s, I still found *Wu Qin Xi* being practiced by patients alongside health care workers on a cancer ward in Wuhan.

Yu, Rencun. 1983. *Zhongyi zhongliuxue* [Chinese medical oncology 中医肿瘤学], vol. I & II. Beijing: Kexue chubanshe.

- Yu Rencun 郁仁存 (b. 1934) of the Beijing Hospital of Chinese Medicine affiliated with Capital Medical University published the first official textbook on Chinese medical oncology.
- Volume I contains a particularly incisive discussion on the practical principles of *bianzheng lunzhi* in cancer treatment that unfolds from the familiar call to treat illness at its root (*zhibing qiubeng*). Yu discusses how pattern differentiation can be applied towards discerning the diachronic phases of cancer progression in individuals and the synchronic contradictions between treating a local tumor and taking the global bodily processes into consideration (pp. 53-80). Quite unique to Yu's formulation, integration involves combining external and internal treatments, traditional pattern differentiation and folk remedies, as well as the more typical integration of Chinese and Western treatments (pp. 57-58).
- Volume II is a collection of monotherapies, prescriptions, and summaries of pharmacognosy research on anti-cancer herbal medicines.

Zhang, Daizhao (ed). 1983. *Zhongxiyi jiehe zhiliao aizheng* [Integrated Chinese and Western medicine treatments of cancer 中西医结合治疗癌症]. Taiyuan, Shanxi: Shanxi renmin chubanshe.

- Zhang Daizhao 张代钊 (b. 1929) is a pivotal figure in the formulation and transmission of Chinese/integrated medical oncology. A graduate of Shanxi Medical College who participated in the first cohort of "Western Medicine Doctors Studies Chinese Medicine," he apprenticed with Duan Futing 段馥亭, one of four renowned physicians of external

medicine in early-20th Century Beijing. Duan was a contemporary of Shi Jinmo, a foremost medical reformer under the Communist regime who also served as the vice director of the Institute of National Medicine established under the Republican regime in 1931. The North China Institute of National Medicine (*Huabei guoyi xueyuan*) that Shi Jinmo founded in the early 1930s included Duan among its inaugural facult. In the 1950s, Duan joined the Research Academy of Chinese Medicine and practiced at its affiliated Guang'anmen Hospital until his death in 1959. His pupils during this period — Zhang Daizhao, Yu Guiqing, as well as Duan's own nephew and adopted son, Duan Fengwu — all became leading figures of Chinese medical oncology in the succeeding decades who in turn taught many of the senior physicians at Guang'anmen's oncology department today, including Piao Bingkui, the current chair of the department. Zhang Daizhao founded the oncology department at China-Japan Friendship Hospital in Beijing.

- This concise textbook is divided into seven chapters and an appendix: (1) overview, (2) causal factors and mechanisms of pathogenesis, (3) treatment principles and methods, (4) overview of the patterns and treatments for common neoplasms, (5) Chinese medical treatments for commonly experienced adverse reactions to radiation and chemotherapy, (6) collected case records of the integrated treatments of cancer, (7) personal experiences and reflections (*tihui*) on the integrated treatment and prevention of cancer. The appendix collects folk remedies (*tufang*) and experience-based formula (*yanfang*) for cancer treatment.
- For a textbook that carries "integration" in its title, considerably fewer references are made to biomedical concepts in comparison to more recent textbooks on "Chinese medical oncology" or "integrative oncology." Chapter 2 makes no mention of genetic

causes of cancer; instead the causal factors are divided into “internal” and “external,” with the “internal” section listing disharmony of Qi and Blood, phlegm stasis, damaging toxic heteropathy and depletion to the organs and viscera as the four causes. The section on “external causes” briefly alludes to modern chemical and physical carcinogens as examples of the “six excesses” of wind (*feng*), cold (*han*), fire (*huo*), dampness (*shi*), dryness (*zao*) and summer heat (*shu*) described in the *Nei jing*. Chapters 4-6 assembles a large collection of herbal remedies classified according to indications based on tumor nosology, symptoms, patterns and concurrent treatment.

Zhou, Daihan (ed). 2007. *Zhongyi zhongliuxue* [Chinese medical oncology 中医肿瘤学]. Guangzhou, Guangdong: Guandong gaodeng jiaoyu chubanshe.

- Zhou Daihan 周岱翰 (b. 1941) is representative of the “Lingnan School” of Chinese medical oncology, which is in turn closely affiliated with the scholarly emphasis of the Guangzhou University of Chinese Medicine on the distinct climes and bodily constitutions of South China. Relatedly, pathogenic factors such as Dampness (*shi*) and fire (*huo*) are of cardinal concern in differentiating patterns. Otherwise, Zhou’s explications of pattern/disease differentiation and how to strike a balance between bolstering and attacking are remarkably consistent with those of his northern colleagues.
- Organized into three sections, thirteen chapters with an appendix, Zhou begins with a philological exploration of premodern and modern (integrated) understandings of tumor pathophysiology. Section one also contains chapters on Chinese medical treatments for acute neoplastic syndromes, such as hemorrhage and tumor lysis syndrome. It devotes a chapter outlining different dietetic regimens for treating and preventing cancer, a scholarly interest of Zhou’s that most certainly resonates with the connoisseurship around

medicinal soups and meals common in Cantonese households. The remaining sections discusses specific treatments for cancer ordered by anatomically classified tumors (section 2) and different formulations for delivering herbal medicines (section 3).

Lin, Lizhu (ed). 2013. *Zhongliu zhongxiyi zhiliaoxue* [Integrated Chinese and Western therapeutics for cancer 肿瘤中西医治疗学]. Beijing: People's Military Medical Press.

- Edited by Lin Lizhu 林丽珠 (b. 1962), the current chair of the Department of Oncology at the First Affiliated Hospital of Guangzhou University of Chinese Medicine and the intellectual heir to Zhou Daihan, along with over two dozen of her colleagues in Guangzhou. At 500-pages and divided into four parts, the text is a comprehensive overview of the state-of-the-art biomedical and Chinese medical therapeutics in the treatment of malignancies.
- Part 1 provides a theoretical overview of cancer beginning with Chinese medical notions of tumorous conditions and toxic congestions. The majority of the section, by a slim margin, is spent presenting mainstream oncological notions of tumor pathogenesis and treatment from the perspectives of epidemiology, genetics, biochemistry and radiation biology.
- Part 2 constitutes the bulk of the text — over three-fifths — and goes chapter by chapter through each type of tumor classified by organ systems. Each chapter is further subdivided into epidemiology, pathogenesis, diagnostics including oncological staging, differential diagnoses, and treatment. The subsections on diagnostics and treatment comprise highly technical algorithms concordant with current NCCN guidelines. Each "treatment" subsection is further divided into Western and Chinese medical treatment

with the latter containing herbal medicines that correspond to common patterns as well as prescriptions that correspond to different phases of biomedical treatment.

- Part 3 is a slim but important section describing techniques of symptom management in cancer treatment. Here, Chinese medicine again takes center stage, with more varied methods for addressing the sorts of pain, bleeding, obstruction and effusion that occur throughout the body as illness and treatment advance.

Huang, Jinchang. 2012. *Huang Jinchang zhongyi zhongliu bianzhi shijiang* [Huang Jinchang's ten discourses on the Chinese medical differentiation and treatment of tumors 黄金昶中医肿瘤辨治十讲]. Beijing: Zhongguo zhongyiyao chubanshe.

- Huang Jinchang 黄金昶 (b. 1966) is a Chinese medical oncologist at China-Japan Friendship Hospital also on staff at the Beijing University of Chinese Medicine. The book contains with a preface by Zhang Daizhao that commends Huang for having made important contributions to using acupuncture and moxibustion in cancer treatment rather than relying only on herbal medicines. The ten discourses traverse a range of topics without conforming to the binary structure of general theoretical overview and specific treatments of most Chinese medical oncology textbooks. While some chapters contain usual remarks on the different methods and dimensions of pattern differentiation, some are organized around unorthodox but tantalizing topics that deviate from post-1950 TCM framework. Chapter 5, for example, avers that the divinatory classic *Yi jing* (Classic of Changes) can reliably predict the patient's time of death.

Collected Case Histories and Experience-based Formulas

Sun, Bingyan. 1992. *Sun Bingyan zhiliao zhongliu linchuang jingyan* [Clinical experiences of Sun Bingyan treating cancer 孙秉严治疗肿瘤临床经验]. Beijing: Kexue chubanshe.

- Sun Bingyan (b. 1920) was born into a medical family in Shandong and spend an early part of his life in Korea before returning to China in 1953 to be assigned to work at the small Dongxing Shichang Hospital of Heping District in Tianjin. An outsider to the academic circuits of Chinese medical oncology with its centers in Beijing and Guangzhou, Sun nevertheless achieved national renown for the efficacy of his remedies, exemplified in these case histories. In 1976, the Tianjin Municipal Bureau of Health and the Heping District Health Bureau tracked 163 cases treated by Sun, with 80 of them having survived for over 6 years, remarkable considering that most of the patients Sun treats have late-stage cancer that recurred after conventional treatment.
- The first part of the book describes Sun's method, which are quite unorthodox for favoring the "attacking below" (*gongxia*) strategy of Jin Dynasty physician Zhang Congzheng (1156-1228), using strong toxins including mercury and arsenic in high doses. Sun also propounds on the idea that cancer cannot arise from the six excesses, seven emotions and usual causal factors alone, but require "cancer toxins" (*aidu*) to combine with more common factors to take concrete form as tumors. Without attacking cancer toxin with toxic drugs, the disease cannot be adequately quelled. While admitting with more conventional academic physicians that attacking heteropathy must be counterbalanced with bolstering, Sun's methods are significantly more aggressive. The book contains recipes for over ten different kinds of patent medicines, containing over fifty different toxic ingredients that can be prescribed at doses up to 100g. Numerous cases are described with the prescriptions as well as combination of patent medicines

listed. Sun is ultimately of the opinion that cancer can only be effectively prevented against. He accordingly describes a novel method of examining nail imprints and teeth impressions on the tongue and buccal membrane to screen for those who might be developing malignancies and to supplement the “four examinations” of Chinese medicine for quickly differentiating patterns.

Jia, Kui. 1979. *Ailiu zhongyi fangzhi yanjiu* [Research on the treatment and prevention of cancer with Chinese medicine 癌瘤中医防治研究]. Xi’an, Sha’anxi: Sha’anxi kexue jishu chubanshe.

- Jia Kui 贾堃 (b. 1919) was a Chinese medicine physician at the Chang’an County Hospital, a smaller hospital in the suburbs of Xi’an. This volume of case histories gathered from over twenty years of treating patients with cancer. All of the cases were diagnosed by Western medical imaging and pathology. Many of the them were also admitted and treated at the Fourth Army Military Hospital and Xi’an Medical College which Jia Kui mentioned in the preface with gratitude for their cooperation. The cases are separated into chapters according to anatomical origin of the tumor. There is even an insert of five x-ray scans of a patient treated over from 1963 over nine years, whose right upper quadrant lung tumor shrank, grew and shrank again as he took *pingxiaodan* 平消丹, a patent medication that Jia Kui invented, on and off for all these years. The prescription for *pingxiaodan* is included in the book (p. 9) and contains 18 grams of white arsenic (arsenic trioxide) along with seven other ingredients. Elsewhere, Jia includes prophylactic recommendations to prevent esophageal cancer — eating plenty of vegetables, avoiding overly hot liquids, placing loess dolls in drinking water — and

encourages consuming *pingxiaodan* for symptoms of difficulty swallowing associated with esophageal cancer.

Xie, Wenwei (ed). 2007. *Zhongyi chenggong zhiliao zhongliu yibai li, 4th edition.* [100 examples of the successful treatment of cancer with Chinese medicine 中医成功治疗肿瘤 100 例，第四版]. Beijing: Zhongguo caizheng jingji chubanshe.

- First published in 1993, Xie Wenwei, the editor, is a Chinese medicine physician who lost his 8-year old son to cancer after aggressive surgery, radiation and chemotherapy. He subsequently culled cases histories from books and journals published before the 1990s of patients seen in between 1960s-1980s to form the present volume. The book has been repeatedly reprinted with appended prescriptions at the behest of patients who make up most of Xie's readership, but no new cases were added since publication because, as Xie states in the preface, clinicians of the previous era are more rigorous and reliable.
- The cases are organized by tumor location. Each case history is followed by Xie's commentaries on the tumor's characteristics, notable events in the treatment course, the clinician's style, often drawing comparisons with other cases Xie included in the collection. Despite the book's title and the author's polemic against antagonistic and aggressive biomedical treatments, many of the cases do mention biomedical treatments, sometimes incidentally as part of the patient's treatment course, other times deliberately employed y the clinician, usually at a reduced dose. Cases from experienced physicians such as Jia Kui and Sun Bingyan are placed next to those originating from prestigious academic medical oncologists, such as Zhang Daizhao.

Zhao, Jiancheng. 1991. *Duan Fengwu zhongliu jiyanfang* [The accumulated experience-based formula of Duan Fengwu 段凤舞肿瘤积验方]. Hefei, Anhui: Anhui kexue jishu chubanshe.

- Collection of "experience" (viz. tried and tested) formulas assembled by Zhao Jiancheng for his teacher Duan Fengwu 段凤舞 (b. 1920), son of the revered external medicine specialist of Guang'anmen Hospital, Duan Futing. The majority of the book — over five hundred pages — lists one formula after another, and most come with few explicit instructions for how they should be processed and used. These concise recipes are separated into chapters by tumor type, which include both benign and malignant tumors, sometimes without differentiating which prescriptions are for which. The formulas range from one to two ingredients to over two dozen. Some are quite idiosyncratic, such as one containing 30 grams of palm lily leaf (*tieshuye*), 30 grams of hibiscus leaf (*furongye*), and 15 grams of sun spurge (*zeqi*) to be decocted in water and taken once daily for lung cancer (p. 123). Others contain hair-raising combinations of snakes, scorpion, centipede and pangolin. The book ends with a large table detailing the toxicities of select drugs, including those not usually considered to be toxic, such as ginseng.

Hua, Baojin and Wei Hou. (2014). *Piao Bingkui zhiliao exing zhongliu jingyan xiecui* [The collected experiences of Piao Bingkui treating malignant tumors 朴炳奎治疗恶性肿瘤经验撷萃]. Beijing: Zhongguo zhongyiyao chubanshe.

- Piao Bingkui (b. 1937) 朴炳奎 is a Western medicine physician who studied Chinese medicine in the third "Western Medicine Studies Chinese Medicine" class in 1959. Since 1975, he has been a member of the Department of Oncology at Guang'anmen Hospital in Beijing. After one year of clinical specialty training at the Cancer Hospital of the Chinese Academy of Chinese Medical Sciences for one year and in Japan for two years at the

National Cancer Center Japan, Piao became the Vice Director of Guang'anmen Hospital and a national leader in Chinese medical oncology. The book reflects Piao's institutional pedigree, with a preface from Zhang Daizhao, Sun Yan, the director of medical oncology at the Cancer Hospital of CAMS and Wang Yongyan, the honorary chairman of the Chinese Academy of Chinese Medical Sciences (CACMS).

- The book is divided into three sections: theoretical overview, scientific research and treatment of malignant tumors. The first section contain biographical materials compiled by the editors, theoretical tracts that summarized Piao's approach composed by his students, a collection of commonly prescribed recipes and a small selection of essays written by Piao to shed insight on complex topics in Chinese medical oncology. The middle section contains research articles that Piao and his collaborators published over the years, many of which are on the efficacy of the patent Chinese medicine *feiliuping gao* (肺瘤平膏) containing mainly non-toxic bolstering herbs. Included are data from a randomized controlled trial that enrolled 200 patients with lung cancer from 1991-1995 that suggests that the formula can help reduce incidence of metastasis and improve quality of life. The third section is further subdivided into cancers by site of anatomical origin, and describe methods and common patterns specific to each type of cancer, followed by exemplary case histories.

Lin, Lizhu, Zhiwei Xiao and Shaocong Zhang. 2016. *Zhongyi zhiliao zhongliu: lilun yu yan'an* [Treating cancer with Chinese medicine: theory and case studies 中医治疗肿瘤：理论与验案]. Beijing: Zhongguo zhongyiyao chubanshe.

- An album of case histories edited by Lin Lizhu and her students, Xiao Zhiwei and Zhang Shaocong. Organized in two sections, the first describes general theory and the second

contains a collection of case histories divided by tumor type. Chapter 1 notably tries to reconcile Zhang Zhongjing's *Treatise on Cold Damage*, the Han Dynasty medical classic considered the most clinically insightful, with tumor progression. Emphasis is placed on six warp pattern differentiation (*liujing bianzheng*) that Zhang Zhongjing used to discern the spatial depth and temporal stage of cold damage disorders. The second half of the book contains a succession of case histories. Like Piao's case histories, they make abundant references to Western medical diagnostic exams and concurrent treatments. Through serial exams over several years, each case describes how Chinese medicine not only controlled tumor progression but alleviated specific syndromic patterns.

Li, Liuning (ed.). 2015. *Zhongliu zhuanke zhongxiyi jiehe yi'an* [Integrated Chinese and Western medicine cases in oncology 肿瘤专科中西医结合医案]. Beijing: Renmin weisheng chubanshe.

- This collection of case histories gathers cases from a decade of experience from the oncology department at the Guangdong Provincial Hospital of Chinese Medicine (not affiliated with the GUCM). Notably, the album of cases represents collective and institutional strategies and styles without attaching individual names of the attending physician to any of the cases. Each case concludes with commentaries written by Liu Weisheng, a senior physician at the department. The description of clinical course spans months to years, replete with imaging scans and biomarker values at several encounters, and detailed inventory of the Western interventions and Chinese herbal medicines received. The commentaries concentrate on key inflection points in courses of treatment in which Chinese medicine played a pivotal role, such as clearing up an episode of malignant pleural effusion or bolstering the Stomach qi so the course of tumor progression, however objectively documented, appeared to stabilize.

BIBLIOGRAPHY

Agamben, Giorgio. 1998. *Homo Sacer: Sovereign Power and Bare Life.* Stanford, CA: Stanford University Press.

American Cancer Society. 2015. "Cancer Staging. Understanding Your Diagnosis." Accessed March 6, 2019. https://www.cancer.org/treatment/understanding-your-diagnosis/staging.html.

Anand, Nikhil, Akhil Gupta, and Hannah Appel, eds. 2018. *The Promise of Infrastructure*. Durham, NC: Duke University Press Books.

Andrews, Bridie, and Mary Brown Bullock, eds. 2014. *Medical Transitions in Twentieth-Century China*. Bloomington, IN: Indiana University Press.

Andrews, Bridie. 2014. *The Making of Modern Chinese Medicine, 1850-1960*. Vancouver, BC: UBC Press.

Appadurai, Arjun. 1990. Disjuncture and Difference in the Global Cultural Economy. *Theory, Culture & Society.* 7(2–3): 295–310.

Armstrong, David. 1995. "The Rise of Surveillance Medicine." *Sociology of Health & Illness* 17(3): 13.

Arnold, David. 1993. *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India*. Berkeley, CA: University of California Press.

Asad, Talal. 1986. "The Concept of Cultural Translation in British Social Anthropology." In *Writing Culture: The Poetics and Politics of Ethnography*, edited by James Clifford and George E Marcus, 141–164. Berkeley, CA: University of California Press.

Auer, Peter, and Aldo Di Luzio. 1992. *The Contextualization of Language*. John Benjamins Publishing.

Bai, Jianfeng. 2011. *Zhongguo shi yihuan guanxi* [Chinese-style patient-doctor relations]. Beijing: Hongqi chubanshe.

Banerjee, Dwaipayan. 2013. *Concealments and Conciliations: The Emergent Politics of Cancer in India*. MIT.

Barbehenn, Elizabeth, Peter Lurie, and Sidney Wolfe. 2005. “Ban Gefitinib (Iressa).” *Public Citizen* website. Accessed March 17, 2019. https://www.citizen.org/our-work/health-and-safety/petition-remove-cancer-drug-gefitinib-iressa-market.

Barber, S. L., M. Borowitz, H. Bekedam, and J. Ma. 2014. “The Hospital of the Future in China: China’s Reform of Public Hospitals and Trends from Industrialized Countries.” *Health Policy and Planning.* 29(3): 367–378.

Barber, S. L., M. Borowitz, H. Bekedam, and J. Ma. 2014. “The Hospital of the Future in China: China’s Reform of Public Hospitals and Trends from Industrialized Countries.” *Health Policy and Planning* 29(3): 367–378.

Benjamin, Walter. 2000 [1923]. “The Task of the Translator.” In *The Translation Studies Reader,* edited by Lawrence Venuti, translated by Harry Zohn, 15-22. New York, NY: Routledge.

Benveniste, Emile. 1973. *Problems in General Linguistics*. Miami, FL: University of Miami Press.

Berg, Marc and Annemarie Mol. 1998. *Differences in Medicine: Unraveling Practices, Techniques, and Bodies*. Durham, NC: Duke University Press.

Berlant, Lauren. 2007. “On the Case.” *Critical Inquiry* 33(4): 663–672.

Bourdieu, Pierre, Loic J. D. Wacquant, and Samar Farage. 1994. “Rethinking the State: Genesis and Structure of the Bureaucratic Field.” *Sociological Theory* 12(1): 1–18.

Bourdieu, Pierre. 1990. *The Logic of Practice.* Cambridge, UK: Polity.

Bowker, Geoffrey C. and Susan Leigh Star. 2000. *Sorting Things Out: Classification and Its Consequences*. Cambridge, MA: MIT Press.

Brotherton, P. Sean. 2012. *Revolutionary Medicine: Health and the Body in Post-Soviet Cuba*. Durham, NC: Duke University Press.

Bruin, Elza C. de, Nicholas McGranahan, Richard Mitter, et al. 2014. “Spatial and Temporal Diversity in Genomic Instability Processes Defines Lung Cancer Evolution.” *Science* 346(6206): 251–256.

Buccheri, Gianfranco. 1991. “Chemotherapy and Survival in Non-Small Cell Lung Cancer: The Old Vexata Questio.” *Chest* 99(6): 1328–1329.

Burchell, Graham, Colin Gordon, and Peter Miller, eds. 1991. *The Foucault Effect: Studies in Governmentality.* Chicago, IL: University of Chicago Press.

Callon, Michel. 1984. “Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay.” *The Sociological Review* 32(1_suppl): 196–233.

Campbell, Charlie. 2016. “China’s Cancer Patients Illicitly Import Their Own Drugs.” *Time* magazine, September 1. Accessed January 28, 2019. http://time.com/4475469/china-health-drugs-cancer-taobao-internet-azd9291-astrazeneca/.

Cardenal, Felipe, M. Paz López-cabrerizo, Vicente Alberola, et al. 1999. “Randomized Phase III Study of Gemcitabine-Cisplatin versus Etoposide-Cisplatin in the Treatment of Locally Advanced or Metastatic Non-Small-Cell Lung Cancer.” *J. Clin. Oncol* 17(1): 12–18.

Casey, Edward. 1996. “How to Get from Space to Place in a Fairly Short Stretch of Time: Phenomenological Prolegomenna.” In *Senses of Place*, edited by Steven Feld and Keith H. Basso, 13-52. Santa Fe, NM: School of American Research Press

Chakrabarty, Dipesh. 2008. *Provincializing Europe: Postcolonial Thought and Historical Difference*. Princeton, NJ: Princeton University Press.

Chen, C. C. and Frederica M. Bunge. 1989. *Medicine in Rural China: A Personal Account.* Berkeley, CA: University of California Press.

Chen, G. Q., J. Zhu, X. G. Shi, et al. 1996. “In Vitro Studies on Cellular and Molecular Mechanisms of Arsenic Trioxide (As2O3) in the Treatment of Acute Promyelocytic Leukemia: As2O3 Induces NB4 Cell Apoptosis with Downregulation of Bcl-2 Expression and Modulation of PML-RAR Alpha/PML Proteins.” *Blood* 88(3): 1052–1061.

Chen, Jing. 2017. “*Di er jie sainuofei zhong ou MDT zhongguo moshi gaofeng luntan: xiaohua zhongliu MDT dianfeng duihua*” [Second Sanofi Sino-Europe elite conference on the Chinese MDT Model: GI Tumor MDT Conference]. *Chinanews.com*. Accessed March 6, 2019. http://www.sh.chinanews.com.cn/yljk/2017-06-30/25467.shtml.

Chen, Wanqing, Rongshou Zheng, Peter D. Baade, et al. 2016. “Cancer Statistics in China, 2015.” *CA: A Cancer Journal for Clinicians* 66(2): 115–132.

Chen, Zhuxin. 2018. “Shiyaozhe | Xiwang de lieshou” [Drug testers | hunters of hope]. *Southern Weekly*. Accessed February 9, 2019. http://www.infzm.com/content/138370.

China Anti-Cancer Association. 2016. “Aizheng shi yizhong manxingbing” [Cancer is a type of chronic disease]. *China Anti-Cancer Association*. Accessed March 2, 2019. http://www.caca.org.cn/system/2016/04/05/011247162.shtml.

Chinese Medical Association, and Chinese Association of Integrated Chinese and Western Medicine. 2010. *Zhongguo zhongxiyi jiehe xuekeshi* [History of the integrated Chinese and Western medicine discipline]. Beijing: Zhongguo kexue jishu chubanshe.

Clarke, Adele E., Laura Mamo, Jennifer R. Fishman, Janet K. Shim, and Jennifer Ruth Fosket. 2003. “Biomedicalization: Technoscientific Transformations of Health, Illness, and U.S. Biomedicine.” *American Sociological Review* 68(2): 161.

Comella, P., G. Filippelli, G. De Cataldis, et al. 2007. “Efficacy of the Combination of Cisplatin with Either Gemcitabine and Vinorelbine or Gemcitabine and Paclitaxel in the Treatment of Locally Advanced or Metastatic Non-Small-Cell Lung Cancer: A Phase III Randomised Trial of the Southern Italy Cooperative Oncology Group (SICOG 0101).” *Annals of Oncology* 18(2): 324–330.

Cooper, Melinda and Catherine Waldby. 2014. *Clinical Labor: Tissue Donors and Research Subjets in the Bioeconomy*. Durham, NC: Duke University Press.

Cooper, Melinda. 2012. “The Pharmacology of Distributed Experiment – User-Generated Drug Innovation.” *Body & Society* 18(3–4): 18–43.

Croizier, Ralph C. 1968. *Traditional Medicine in Communist China: Science, Communism and Cultural Nationalism*. Cambridge, MA: Harvard University Press.

Culyer, A. J. 2005. *The Dictionary of Health Economics*. Chelthenham, UK; Northampton, MA: Edward Elgar Publishing Inc.

Dana-Farber Cancer Institute. 2019. “The Difference between Cancer and Tumor.” *For Patients & Families*. Accessed March 9, 2019. https://www.dana-farber.org/for-patients-and-

families/becoming-a-patient/international-patients/chinese/inspiration/癌症和肿瘤的区别 ABcancer-and-a-tumor/.

Daston, Lorraine. 2012. “The Sciences of the Archive.” *Osiris* 27(1): 156–187.

Degos, Laurent. 2003. “The History of Acute Promyelocytic Leukaemia.” *British Journal of Haematology* 122(4): 539–553.

del Vecchio Good, Mary-Jo, Byron J. Good, Cynthia Schaffer, and Stuart E. Lind. 1990. “American Oncology and the Discourse on Hope.” *Culture, Medicine and Psychiatry* 14(1): 59–79.

Deleuze, Gilles. 1992. “Postscript on the Societies of Control.” *October* 59: 3–7.

Derrida, Jacques. 1985. “Des Tours de Babel.” In *Difference in Translation*, edited by Joseph F. Graham, 165–207. Ithaca, NY: Cornell University Press.

Detterbeck, Frank C., Daniel J. Boffa, Anthony W. Kim, and Lynn T. Tanoue. 2017. “The Eighth Edition Lung Cancer Stage Classification.” *Chest* 151(1): 193–203.

Dumit, Joseph. 2004. *Picturing Personhood: Brain Scans and Biomedical Identity.* Princeton, NJ: Princeton University Press.

Dumit, Joseph. 2012. *Drugs for Life: How Pharmaceutical Companies Define Our Health*. Durham, NC: Duke University Press.

Edwards, Paul N. 2010. *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming*. Cambridge, MA: MIT Press.

Eggleston, Karen. 2012. “Health Care for 1.3 Billion: China’s Remarkable Work in Progress.” *Milken Institute Review* 2: 16–27.

Eisenhauer, E.A., P. Therasse, J. Bogaerts, et al.2009. “New Response Evaluation Criteria in Solid Tumours: Revised RECIST Guideline (Version 1.1).” *European Journal of Cancer* 45(2): 228–247.

Elman, Benjamin A. 2005. *On Their Own Terms: Science in China, 1550-1900*. Cambridge, MA: Harvard University Press.

Elman, Benjamin A. ed. 2015. *Antiquarianism, Language, and Medical Philology: From Early Modern to Modern Sino-Japanese Medical Discourses*. Leiden; Boston: Brill.

Epstein, Steven. 1997. "Activism, Drug Regulation, and the Politics of Therapeutic Evaluation in the AIDS Era: A Case Study of DdC and the 'Surrogate Markers' Debate." *Social Studies of Science 27*(5): 691–726.

Fan, Fa-ti. 2012. "Science, State, and Citizens: Notes from Another Shore." *Osiris* 27(1): 227–249.

Fan, Lei, Kathrin Strasser-Weippl, Jun-Jie Li, et al. 2014. "Breast Cancer in China." *The Lancet Oncology* 15(7): e279–e289.

Fang, Xiaoping. 2012. *Barefoot Doctors and Western Medicine in China*. Rochester, NY: University of Rochester Press.

Farquhar, Judith and Qicheng Zhang. 2005. "Biopolitical Beijing: Pleasure, Sovereignty, and Self-Cultivation in China's Capital." *Cultural Anthropology* 20(3): 303–327.

Farquhar, Judith, and Qicheng Zhang. 2012. *Ten Thousand Things: Nurturing Life in Contemporary Beijing*. New York, NY: Zone Books.

Farquhar, Judith. "STS, TCM, and Other Shi 勢 (Situated Dispositions of Power/Knowledge)." *East Asian Science, Technology and Society* 11(2): 235–238.

Farquhar, Judith. 1991. "Objects, Processes, and Female Infertility in Chinese Medicine." *Medical Anthropology Quarterly* 5(4): 370–399.

Farquhar, Judith. 1992. "Time and Text: Approaching Chinese Medical Practice Through Analysis of a Published Case." In *Paths to Asian Medical Knowledge*, edited by Charles Leslie and Allan Young, 62–73. Berkeley, CA: University of California Press.

Farquhar, Judith. 1994a. "Eating Chinese Medicine." *Cultural Anthropology* 9(4): 471–497.

Farquhar, Judith. 1994b. *Knowing Practice: The Clinical Encounter of Chinese Medicine*. Boulder, CO: Westview Press.

Fleming, Irvin D. 2001. "AJCC/TNM Cancer Staging, Present and Future." *Journal of Surgical Oncology* 77(4): 233–236.

Foucault, Michel. 1978. *The History of Sexuality, Vol. 1 An Introduction.* New York: Pantheon Books.

Foucault, Michel. 1988. *Madness and Civilization: A History of Insanity in the Age of Reason*. New York: Vintage.

Foucault, Michel. 1995. *Discipline and Punish: The Birth of the Prison*. New York: Vintage Books.

Foucault, Michel. 2003. *The Birth of the Clinic*. London: Routledge.

Foucault, Michel. 2004. "The Crisis of Medicine or the Crisis of Antimedicine?" *Foucault Studies* (1): 5–19.

Foucault, Michel. 2008. *The Birth of Biopolitics: Lectures at the Collège de France, 1978-79*. Basingstoke; New York: Palgrave Macmillan.

Fraser, Nancy. 2003. "From Discipline to Flexibilization? Rereading Foucault in the Shadow of Globalization." *Constellations* 10(2): 160–171.

Fu, Jia-Chen. 2017. "Artemisinin and Chinese Medicine as Tu Science." *Endeavour* 41(3). Science, Technology, and Medicine in China's Cultural Revolution: 127–135.

Furth, Charlotte, Judith T. Zeitlin, and Ping-chen Hsiung. 2007. *Thinking with Cases: Specialist Knowledge in Chinese Cultural History*. Honolulu, Hawaii: University of Hawaii Press.

Furth, Charlotte. 1999. *A Flourishing Yin: Gender in China's Medical History: 960–1665*. Berkeley, CA: University of California Press.

Garraway, Levi A. and Pasi A. Jänne. 2012. "Circumventing Cancer Drug Resistance in the Era of Personalized Medicine." *Cancer Discovery* 2(3): 214–226.

Gasché, Rodolphe. 1986. *The Tain of the Mirror: Derrida and the Philosophy of Reflection*. Cambridge, MA: Harvard University Press.

Geertz, Clifford. 1973. *The Interpretation of Cultures: Selected Essays*. New York, NY: Basic Books.

Giddens, Anthony. 1990. *The Consequences of Modernity*. Cambridge, UK: Polity Press.

Goffman, Erving. 1956. *The Presentation of Self in Everyday Life*. Edinburgh: University of Edinburgh, Social Sciences Research Centre.

Goffman, Erving. 1962. *Asylums: Essays on the Social Situation of Mental Patients and Other Inmates*. Chicago, IL: Aldine Pub. Co.

Goffman, Erving. 1981. *Forms of Talk*. Philadelphia, PA: University of Pennsylvania Press.

Goffman, Erving. 1982. *Interaction Ritual: Essays on Face-to-Face Behavior*. New York: Pantheon Books.

Gordon Steel, G. and Michael J. Peckham. 1979. "Exploitable Mechanisms in Combined Radiotherapy-Chemotherapy: The Concept of Additivity." *International Journal of Radiation Oncology Biology Physics* 5(1): 85–91.

Goss, Paul E., Kathrin Strasser-Weippl, Brittany L. Lee-Bychkovsky, et al. 2014. "Challenges to Effective Cancer Control in China, India, and Russia." *The Lancet Oncology* 15(5): 489–538.

Graham, Susan M., Heather G. Jørgensen, Elaine Allan, et al. 2002. "Primitive, Quiescent, Philadelphia-Positive Stem Cells from Patients with Chronic Myeloid Leukemia Are Insensitive to STI571 in Vitro." *Blood* 99(1): 319–325.

Greaves, Mel, and Carlo C. Maley. 2012. "Clonal Evolution in Cancer." *Nature* 481(7381): 306–313.

Greene, Jeremy A. 2008. *Prescribing by Numbers: Drugs and the Definition of Disease*. Baltimore, MD: Johns Hopkins University Press.

Greenhalgh, Susan, and Edwin A. Winckler. 2005. *Governing China's Population: From Leninist to Neoliberal Biopolitics*. Stanford, CA: Stanford University Press.

Guo, Shanshan. 2015. "Hubei mingqüe gongli yiyuan chuangweifei biaozhun chuyuan dangtian busuan feiyong" [Hubei clarifies bed price guideline for public hospitals, no need to bill on the day of discharge]. *Hubei.gov*. Accessed March 12, 2019. http://www.hubei.gov.cn/zwgk/rdgz/rdgzqb/201512/t20151218_765414.shtml.

Hacking, Ian. 1983. *Representing and Intervening: Introductory Topics in the Philosophy of Natural Science*. Cambridge, MA: Cambridge University Press.

Hacking, Ian. 2004. “Between Michel Foucault and Erving Goffman: Between Discourse in the Abstract and Face-to-Face Interaction.” *Economy and Society* 33(3): 277–302.

Halperin, Edward C., Luther W. Brady, Carlos A. Perez, and David E. Wazer. 2013. *Perez & Brady’s Principles and Practice of Radiation Oncology.* Lippincott Williams & Wilkins.

Han, Haochen. 2018. “Li Keqiang jiu dianying {Wo bushi yaoshen} ying reyi zuo pishi ” [Li Keqiang offers commentaries and directives in regards to the heated discussion surrounding the film *Dying to Survive*]. *Chinese Government* website. http://www.gov.cn/guowuyuan/2018-07/18/content_5307223.htm, accessed January 28, 2019.

Handou Jingshen. 2014a. “*Handou Jingshen niding fei xiaoxibao fei’ai (buhan ALK yangxing) luhuan shiyong baxiangyao de fangfa*” [A Handou Jingshen designed method for rotating targeted cancer drugs for non-small cell lung cancer (excluding ALK+)]. *Yu’aigongwu* website. Accessed March 18, 2019. http://www.yuaigongwu.com/thread-16120-1-1.html.

Handou Jingshen. 2014b. “*Hanshi baxiangyao sibufa de xiangxi jieshuo* (5)” [Detailed explanation of Mr. Han’s Four Step Method of Targeted Cancer Drugs, part 5]. *Yu’aigongwu* [Dances with Cancer]. http://www.yuaigongwu.com/thread-19594-1-1.html, accessed March 18, 2019.

Hanks, William F. 2009. “Fieldwork on Deixis.” *Journal of Pragmatics* 41(1): 10–24.

Hanks, William. 1992. “The Indexical Ground of Deixis Reference.” In *Rethinking Context: Language as an Interactive Phenomenon*, edited by Alessandro Duranti and Charles Goodwin, 43–76. Cambridge University Press.

Hannerz, U. 1989. “Notes on the Global Ecumene.” *Public Culture* 1(2): 66–75.

Haraway, Donna. 1991. *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge.

Hardon, Anita and Emilia Sanabria. 2017. “Fluid Drugs: Revisiting the Anthropology of Pharmaceuticals.” *Annual Review of Anthropology* 46(1): 117–132.

Hardt, Michael. 1995. “The Withering of Civil Society.” *Social Text* (45): 27–44.

Harvey, David. 2005. *A Brief History of Neoliberalism*. Oxford , UK: Oxford University Press.

Harvey, David. 2018. *Marx, Capital and the Madness of Economic Reason*. Oxford, UK: Oxford University Press.

Harvey, Penelope, Casper Brunn Jensen, and Atsuro Morita, eds. 2016. *Infrastructures and Social Complexity: A Companion.* London; New York: Routledge.

Harvey, Penny and Hannah Knox. 2015. R*oads: An Anthropology of Infrastructure and Expertise*. Ithaca, NY: Cornell University Press.

He, Alex Jingwei, and Jiwei Qian. 2016. "Explaining Medical Disputes in Chinese Public Hospitals: The Doctor–Patient Relationship and Its Implications for Health Policy Reforms." *Health Economics, Policy and Law* 11(4): 359–378.

Hesketh, T., D. Wu, L. Mao, and N. Ma. 2012. "Violence against Doctors in China." *BMJ* 345(sep071): e5730–e5730.

Hillier, S. and J. Shen. 1996. "Health Care Systems in Transition: People's Republic of China: Part I: An Overview of China's Health Care System." *Journal of Public Health* 18(3): 258–265.

Hou, Jianlin, Catherine Michaud, Zhihui Li, et al. 2014. "Transformation of the Education of Health Professionals in China: Progress and Challenges." *The Lancet* 384(9945): 819–827.

Hsiao, William CL. 2014. "Correcting Past Health Policy Mistakes." *Daedalus* 143(2): 53–68.

Hsiao, William CL. 1995. "The Chinese Health Care System: Lessons for Other Nations." *Social Science & Medicine* 41(8): 1047–1055.

Hsu, Elisabeth. 1999. *The Transmission of Chinese Medicine*. Cambridge, UK: Cambridge University Press.

Hsu, Elisabeth. 2001. *Innovation in Chinese Medicine*. Cambridge, UK: Cambridge University Press.

Hsu, Elisabeth. 2015. "From Social Lives to Playing Fields: 'The Chinese Antimalarial' as Artemisinin Monotherapy, Artemisinin Combination Therapy and Qinghao Juice." *Anthropology & Medicine* 22(1): 75–86.

Hu, Kaiwen, and Tian Zhou. 2016. “Theory and Practice of Cancer ‘Green Therapy.’” *Journal of Traditional Chinese Medical Sciences* 3(4): 201–205.

Hu, Kaiwen. 2013. “Zhongliu de ‘lüse zhiliao’” [Cancer ‘Green Therapy’]. *Journal of the Beijing University of Traditional Chinese Medicine (Chinese Medicine Clinical Edition)* 4: 5–7.

Hua, Baojin and Wei Hou. 2014. *Piao Bingkui zhiliao exing zhongliu jingyan xiecui* [The collected experiences of Piao Bingkui treating malignant tumors]. Beijing: Zhongguo zhongyiyao chubanshe.

Huang, Chengfeng. 2010. “Zhong Nanshan: Fang Zhouzi shuo zhongyi bukexue taijuedui” [Zhong Nanshan: Fang Zhouzi’s statement about Chinese medicine as a pseudoscience is too absolutist]. Sciencenet. Accessed March 8, 2019. http://news.sciencenet.cn/htmlnews/2010/10/238239.shtm.

Huang, Jiaoshen. 2015. “Wu Yilong: fei ai baxiang zhiliao xunxiang geng jingzhun” [Wu Yilong: Lung cancer targeted therapies move toward greater precision.] *Jiankangjie*. Accessed March 17, 2019. https://www.cn-health care.com/article/20150325/content-471893.html.

Jain, S. Lochlann. 2013. *Malignant: How Cancer Becomes Us*. Berkeley, CA: University of California Press.

Jain, S. Lochlann. 2007. “Living in Prognosis: Toward an Elegiac Politics.” *Representations* 98(1): 77–92.

Jamal-Hanjani, Mariam, Gareth A. Wilson, Nicholas McGranahan, et al. 2017. “Tracking the Evolution of Non–Small-Cell Lung Cancer.” *New England Journal of Medicine* 376(22): 2109–2121.

Jasanoff, Sheila, ed. 2004. *States of Knowledge: The Co-Production of Science and the Social Order*. New York; London: Routledge.

Jensen, Casper Bruun, and Atsuro Morita. 2017. “Introduction: Infrastructures as Ontological Experiments.” *Ethnos* 82(4): 615–626.

Jin, Jin. 2017. “Ling ren shengyi de ‘zhongguo yaosheng’” [The suspicion-raising ‘Drug God of China’]. *GQ Lab*. Accessed March 15, 2019.

https://mp.weixin.qq.com/s?__biz=MjM5MDA1ODAzMg==&mid=2651076339&idx=1& sn=9e53cd2872b7065cfc8b82a70daede0c.

Johnson, David H. 2014. “Setting the Bar for Therapeutic Trials in Non–Small-Cell Lung Cancer: How Low Can We Go?” *Journal of Clinical Oncology* 32(14).

Johnson, David H., and Carlos L. Arteaga. 2003. “Gefitinib in Recurrent Non–Small-Cell Lung Cancer: An IDEAL Trial?” *Journal of Clinical Oncology* 21(12): 2227–2229.

Johnson, Melissa L., Camelia S. Sima, Jamie Chaft, et al. 2013. “Association of KRAS and EGFR Mutations with Survival in Patients with Advanced Lung Adenocarcinomas.” *Cancer* 119(2): 356–362.

Kaptchuk, Ted. 2014. *The Web That Has No Weaver: Understanding Chinese Medicine*. 2nd Edition. New York, NY: McGraw-Hill Education.

Karchmer, Eric I. 2010. “Chinese Medicine in Action: On the Postcoloniality of Medical Practice in China.” *Medical Anthropology* 29(3): 226–252.

Karchmer, Eric. 2005. *Orientalizing the Body: Postcolonial Transformations in Chinese Medicine*. University of North Carolina, Chapel Hill.

Karchmer, Eric. 2017. “Double Truths and the Postcolonial Predicament of Chinese Medicine.” In *The Routledge Companion to Philosophy of Medicine*, edited by Miriam Solomon, Jeremy R. Simon and Harold Kincaid, 508–518. New York; London: Routledge.

Keating, Peter, and Alberto Cambrosio. 2003. *Biomedical Platforms: Realigning the Normal and the Pathological in Late-Twentieth-Century Medicine.* Cambridge, MA: MIT Press.

Keating, Peter, and Alberto Cambrosio. 2007. “Cancer Clinical Trials: The Emergence and Development of a New Style of Practice.” *Bulletin of the History of Medicine* 81(1): 197–223.

Kobayashi, Susumu, Titus J. Boggon, Tajhal Dayaram, et al. 2005. “EGFR Mutation and Resistance of Non–Small-Cell Lung Cancer to Gefitinib.” *New England Journal of Medicine* 352(8): 786–792.

Kohrman, Matthew. 2008. “Smoking among Doctors: Governmentality, Embodiment, and the Diversion of Blame in Contemporary China.” *Medical Anthropology* 27(1): 9–42.

Laet, Marianne de, and Annemarie Mol. 2000. “The Zimbabwe Bush Pump: Mechanics of a Fluid Technology.” *Social Studies of Science* 30(2): 225–63.

Lam, Tai-pong, Xue-hong Wan, and Mary Sau-man Ip. 2006. “Current Perspectives on Medical Education in China.” *Medical Education* 40(10): 940–949.

Landecker, Hannah. 2016. “Antibiotic Resistance and the Biology of History.” *Body & Society* 22(4): 19–52.

Langwick, Stacey A. 2008. “Articulate(d) Bodies: Traditional Medicine in a Tanzanian Hospital.” *American Ethnologist* 35(3): 428–439.

Larkin, Brian. 2013. “The Politics and Poetics of Infrastructure.” *Annual Review of Anthropology* 42(1): 327–343.

Latour, Bruno. 1986. “Visualization and Cognition: Thinking with Eyes and Hands.” *Knowledge and Society* 6: 1–40.

Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge, MA: Harvard University Press.

Latour, Bruno. 1988. *The Pasteurization of France*. Cambridge, MA: Harvard University Press.

Latour, Bruno. 1991. *We Have Never Been Modern*. Cambridge, MA: Harvard University Press.

Latour, Bruno and Steve Woolgar. 1986. *Laboratory Life: The Construction of Scientific Facts*. Princeton, NJ: Princeton University Press.

Law, John, and Wen-yuan Lin. 2017. “Provincializing STS: Postcoloniality, Symmetry, and Method.” *East Asian Science, Technology and Society* 11(2): 211–227.

Lawn, Joy E, Jon Rohde, Susan Rifkin, et al. 2008. “Alma-Ata 30 Years on: Revolutionary, Relevant, and Time to Revitalise.” *The Lancet* 372(9642): 917–927.

Lei, Sean Hsiang-lin. 1999. “From Changshan to a New Anti-Malarial Drug: Re-Networking Chinese Drugs and Excluding Chinese Doctors.” *Social Studies of Science* 29(3): 323–358.

Lei, Sean Hsiang-lin. 2014. *Neither Donkey Nor Horse: Medicine in the Struggle Over China’s Modernity*. Chicago, IL: University of Chicago Press.

Lei, Sean Hsiang-lin. 2002. “How Did Chinese Medicine Become Experiential? The Political Epistemology of Jingyan.” *Positions: East Asia Cultures Critique* 10(2): 333–364.

Levinson, Stephen. 1979. “Pragmatics and Social Deixis: Reclaiming the Notion of Conventional Implicature.” *Proceedings of the Fifth Annual Meeting of the Berkeley Linguistics Society*: 206–223.

Li, Ling. 2010. *Jiankang qiangguo: Li Ling hua yigai* [A nation healthy and strong: Li Ling on medical reforms] Beijing: Peking University Press.

Li, Tangning. 2017. “Minying yiyuan shuliang chao gongli yiyuan duo’er buqiang” [Private hospitals more plentiful than public hospitals, plentiful but weak]. *Jinji cankao bao*. Accessed January 23, 2019. http://www.xinhuanet.com/yuqing/2017-06/28/c_129641705.htm.

Li, Y., J. Xu, F. Wang, et al. 2012. “Overprescribing in China, Driven by Financial Incentives, Results in Very High Use of Antibiotics, Injections, and Corticosteroids.” *Health Affairs* 31(5): 1075–1082.

Li, Yuheng. 2007. “Aizheng bushi jüezheng — guonei zhuming neike zhongliuxue jia, zhongguo gongchengyuan yuanshi Sun Yan lun zhongliu” [Cancer is not a terminal disease — Sun Yan, famous Chinese medical oncologist and fellow of the Chinese Academy of Engineering discusses cancer]. *Capital Medicine* 3: 30-32.

Liang, Dong. 2016. *Chuchu jian shengji: shengming*、*shengling*、*shengyi ji yiqie shenghuo beihou de mimi.* [Vital encounters hither and thither: The secrets behind life, living beings, and livelihood]. Beijing: China Friendship Press.

Lin, Lizhu. 2013. *Zhongliu zhongxiyi zhiliao xue* [Integrated Chinese and Western therapeutics for cancer]. Beijing: People’s Military Medical Press.

Lin, Wen-yuan, and John Law. 2014. “A Correlative STS: Lessons from a Chinese Medical Practice.” *Social Studies of Science* 44(6): 801–824.

Liu, Lydia. 1995. *Translingual Practice: Literature, National Culture, and Translated Modernity - China, 1900-1937.* Stanford, CA: Stanford University Press.

Liu, Xingzhu, Yuanli Liu, and Ningshan Chen. 2000. “The Chinese Experience of Hospital Price Regulation.” *Health Policy and Planning* 15(2): 157–163.

Liu, Yuanli, William C Hsiao, and Karen Eggleston. 1999. “Equity in Health and Health Care: The Chinese Experience.” *Social Science & Medicine* 49(10): 1349–1356.

Lock, Margaret M. and Deborah Gordon, eds. 1988. *Biomedicine Examined. Culture, Illness, and Healing*. Boston, MA: Kluwer Academic Publishers.

Lock, Margaret M. and Judith Farquhar. 2007. *Beyond the Body Proper: Reading the Anthropology of Material Life*. Durham, NC: Duke University Press.

Lock, Margaret M. and Vinh-Kim Nguyen. 2010. *An Anthropology of Biomedicine*. Chichester, West Sussex ; Malden, MA: Wiley-Blackwell.

Lock, Margaret. 2005. “Eclipse of the Gene and the Return of Divination.” *Current Anthropology* 46(S5): S47–S70.

Lock, Margaret. 2011. “Dementia Entanglements in a Postgenomic Era.” *Science, Technology, & Human Values* 36(5): 685–703.

Lora-Wainwright, Anna. 2013. *Fighting for Breath: Living Morally and Dying of Cancer in a Chinese Village*. Honolulu, HI: University of Hawai’i Press.

Löwy, Ilana. 2010. *Preventive Strikes: Women, Precancer, and Prophylactic Surgery*. Baltimore, MD: Johns Hopkins University Press.

Luo, Gang. 2006. “*Zhongguo aixihui lishizhang Xu Guangwei shuo ‘aizheng yicheng kekong manxingbing*” [Chair of Chinese Cancer Society Xu Guangwei said “Cancer is a mangeable chronic disease”]. *Jiankang bao*, August 8, 1st edition.

Lynch, Thomas J., Daphne W. Bell, Raffaella Sordella, et al. 2004. “Activating Mutations in the Epidermal Growth Factor Receptor Underlying Responsiveness of Non–Small-Cell Lung Cancer to Gefitinib.” *New England Journal of Medicine* 350(21): 2129–2139.

Mann, Michael. 1984. “The Autonomous Power of the State: Its Origins, Mechanisms and Results.” *European Journal of Sociology / Archives Européennes de Sociologie / Europäisches Archiv Für Soziologie* 25(2): 185–213.

Mao, Zhenhuaand Bing Wang. 2017. “Quanmian qüxiao yaoping jiacheng woguo yigai chuixiang gongjianhao” [Comprehensive removal of profit margin on pharmaceuticals, our nation blows the trumpet to storm through health care reform]. *Xinhuanet*, December

28. Accessed March 4, 2019. http://www.xinhuanet.com/politics/2017-12/28/c_1122181948.htm.

Marcus, George E. 1995. “Ethnography in/of the World System: The Emergence of Multi-Sited Ethnography.” *Annual Review of Anthropology* 24(1): 95–117.

Marx, Karl.1993 [1939]. *Grundrisse: Foundations of the Critique of Political Economy*. Martin Nicolaus, tran. London, UK: Penguin Books.

Mason, Katherine. 2016. *Infectious Change: Reinventing Chinese Public Health After an Epidemic*. Stanford, CA: Stanford University Press.

Massey, Doreen. 1995. "Places and Their Pasts." *History Workshop Journal* (39): 182–192.

McQuade, Jennifer L., Zhiqiang Meng, Zhen Chen, et al. 2012. “Utilization of and Attitudes towards Traditional Chinese Medicine Therapies in a Chinese Cancer Hospital: A Survey of Patients and Physicians.” *Evidence-Based Complementary and Alternative Medicine* 2012: 1–11.

Meisner, Maurice. 1999. *Mao’s China and After: A History of the People’s Republic*. New York: Simon and Schuster.

Menoret, Marie. 2002. “The Genesis of the Notion of Stages in Oncology: The French Permanent Cancer Survey (1943-1952).” *Social History of Medicine* 15(2): 291–302.

Mok, Tony S., Yi-Long Wu, Myung-Ju Ahn, et al. 2017. “Osimertinib or Platinum–Pemetrexed in EGFR T790M–Positive Lung Cancer.” *New England Journal of Medicine* 376(7): 629–640.

Mok, Tony S., Yi-Long Wu, Sumitra Thongprasert, et al. 2009. “Gefitinib or Carboplatin–Paclitaxel in Pulmonary Adenocarcinoma.” *New England Journal of Medicine* 361(10): 947–957.

Mol, Annemarie, and John Law. 1994. “Regions, Networks and Fluids: Anaemia and Social Topology.” *Social Studies of Science* 24(4): 641–671.

Mol, Annemarie, and John Law. 2004. “Embodied Action, Enacted Bodies: The Example of Hypoglycaemia.” *Body & Society* 10(2–3): 43–62.

Mol, Annemarie. 1999. “Ontological Politics. A Word and Some Questions.” *The Sociological Review* 47(1_suppl): 74–89.

Mol, Annemarie. 2002. *The Body Multiple: Ontology in Medical Practice*. Durham, NC: Duke University Press.

Mol, Annemarie. 2008. *The Logic of Care: Health and the Problem of Patient Choice*. London; New York: Routledge.

Morita, Atsuro. 2014. “The Ethnographic Machine: Experimenting with Context and Comparison in Strathernian Ethnography.” *Science, Technology, & Human Values* 39(2): 214–235.

Morita, Atsuro. 2017. “Multispecies Infrastructure: Infrastructural Inversion and Involutionary Entanglements in the Chao Phraya Delta, Thailand.” *Ethnos* 82(4): 738–757.

Mukherjee, Siddhartha. 2010. *The Emperor of All Maladies: A Biography of Cancer*. New York, NY: Simon and Schuster.

Munn, Nancy D. 1990. “Constructing Regional Worlds in Experience: Kula Exchange, Witchcraft and Gawan Local Events.” *Man* 25(1): 1.

Munn, Nancy D. 1992. “The Cultural Anthropology of Time: A Critical Essay.” *Annual Review of Anthropology* 21(1): 93–123.

Munn, Nancy D. 1992. *The Fame of Gawa: A Symbolic Study of Value Transformation in a Massim (Papua New Guinea) Society*. Durham, NC: Duke University Press.

Myers, Natasha. 2015. *Rendering Life Molecular: Models, Modelers, and Excitable Matter.* Durham, NC: Duke University Press.

National Comprehensive Cancer Network. 2019. “Managing Cancer as a Chronic Condition.” *NCCN Patient and Caregiver Resources*. Accessed March 2, 2019. https://www.nccn.org/patients/resources/life_after_cancer/managing.aspx.

National Health and Family Planning Committee. 2017. *China Health and Family Planning Statistical Yearbook 2017*. Beijing: PUMC Press.

National Health and Family Planning Committee. 2015. “Guanyu yinfa tuijin he guifan yishi duodian zhiye de ruogan yijian he tongzhi” [Notice regarding the publishing and

dissemination of opinions on the multi-site employment of regulated clinicians]. *Zhongguo zhengfu* website. Accessed March 4, 2019. http://www.gov.cn/zhengce/2016-05/22/content_5075661.htm.

National Office for Cancer Prevention and Control, ed. 1973. *Yu zhongliubing zuo douzheng* [Combatting neoplastic diseases]. Beijing: Kexue chubanshe.

Needham, Joseph, and Lu Gwei-Djen. 1999. *Science and Civilization in China. Volume 6, Biology and Biological Technology, Part 6: Medicine*. Cambridge, UK: Cambridge University Press.

Nelson, Nicole C., Peter Keating, Alberto Cambrosio, Adriana Aguilar-Mahecha, and Mark Basik. 2014. "Testing Devices or Experimental Systems? Cancer Clinical Trials Take the Genomic Turn." *Social Science & Medicin*e 111: 74–83.

Ni, Dandan. 2017. "Shortage of Critical Leukemia Drug Threatens Ill Children." *Sixth Tone*. Accessed March 16, 2019. http%3A%2F%2Fwww.sixthtone.com%2Fnews%2F1000776%2Fshortage-of-critical-leukemia-drug-threatens-ill-children.

Obringer, Frédéric. 1997. *L'Aconit et l'orpiment: drogues et poisons en Chine ancienne et médiévale.* Paris: Fayard.

Obringer, Frédéric. 2001. "A Song Innovation in Pharmacotherapy: Some Remarks on the Use of White Arsenic and Flowers of Arsenic." In *Innovation in Chinese Medicine*, edited by Elisabeth Hsu, 192-213. Cambridge, UK: Cambridge University Press.

Oncology Department of the Guangzhou City Hospital of Chinese Medicine. 1974. "*Zhongxiyi jiehe zhiliao exing zhongliu wuli*" [Five cases of treating malignant cancer with integrated Chinese and Western medicine]. *Xin yiyao tongxun* 3: 23–24.

Ong, Aihwa, and Nancy N. Chen. 2010. *Asian Biotech: Ethics and Communities of Fate*. Durham, NC: Duke University Press.

Ong, Aihwa, and Stephen J. Collier. 2004. *Global Assemblages: Technology, Politics, and Ethics as Anthropological Problems.* Malden, MA: Blackwell.

Osburg, John. 2013a. *Anxious Wealth: Money and Morality Among China's New Rich*. Stanford, CA: Stanford University Press.

Osburg, John. 2013b. “Global Capitalisms in Asia: Beyond State and Market in China.” *The Journal of Asian Studies* 72(04): 813–829.

Oxnard, Geoffrey R., Yuebi Hu, Kathryn F. Mileham, et al. 2018. “Assessment of Resistance Mechanisms and Clinical Implications in Patients With EGFR T790M–Positive Lung Cancer and Acquired Resistance to Osimertinib.” *JAMA Oncology* 4(11): 1527–1534.

Paez, J. Guillermo, Pasi A. Jänne, Jeffrey C. Lee, et al. 2004. “EGFR Mutations in Lung Cancer: Correlation with Clinical Response to Gefitinib Therapy.” *Science* 304(5676): 1497–1500.

Pao, William, and Juliann Chmielecki. 2010. “Rational, Biologically Based Treatment of EGFR-Mutant Non-Small-Cell Lung Cancer.” *Nature Reviews Cancer* 10(11): 760–774.

Pao, William, Vincent Miller, Maureen Zakowski, et al. 2004. “EGF Receptor Gene Mutations Are Common in Lung Cancers from ‘Never Smokers’ and Are Associated with Sensitivity of Tumors to Gefitinib and Erlotinib.” *Proceedings of the National Academy of Sciences of the United States of America* 101(36): 13306–13311.

Parmentier, Richard J.1994. *Signs in Society: Studies in Semiotic Anthropology*. Bloomington, IN: Indiana University Press.

Petryna, Adriana. 2005. “Ethical Variability: Drug Development and Globalizing Clinical Trials.” *American Ethnologist* 32(2): 183–197.

Petryna, Adriana. 2007. “Clinical Trials Offshored: On Private Sector Science and Public Health. *BioSocieties* 2(1): 21–40.

Petryna, Adriana. 2009. *When Experiments Travel: Clinical Trials and the Global Search for Human Subjects*. Princeton: Princeton University Press.

Petryna, Adriana. 2013. *Life Exposed: Biological Citizens After Chernobyl*. Princeton: Princeton University Press.

Pickering, Andrew. 1995. *The Mangle of Practice: Time, Agency, and Science*. Chicago, IL: University Of Chicago Press.

Pieke, Frank N. 2004. “Contours of an Anthropology of the Chinese State: Political Structure, Agency and Economic Development in Rural China.” *Journal of the Royal Anthropological Institute* 10(3): 517–538.

Pollack, Andrew. 2003. “Drug’s Approval Hints at Flexibility In F.D.A. Process.” *The New York Times*, May 6. Accessed March 17, 2019. https://www.nytimes.com/2003/05/06/business/drug-s-approval-hints-at-flexibility-in-fda-process.html.

Porkert, Manfred. 1974. *The Theoretical Foundations of Chinese Medicine: Systems of Correspondence*. Cambridge, MA: MIT Press.

Prentice, Rachel. 2013. *Bodies in Formation: An Ethnography of Anatomy and Surgery Education.* Durham, NC: Duke University Press.

Rabeharisoa, Vololona, and Pascale Bourret. 2009. “Staging and Weighting Evidence in Biomedicine: Comparing Clinical Practices in Cancer Genetics and Psychiatric Genetics.” S*ocial Studies of Science* 39(5): 691–715.

Ragin, Charles C., and Howard Saul Becker. 1992. *What Is a Case?: Exploring the Foundations of Social Inquiry.* Cambridge, MA: Cambridge University Press.

Raikhel, Eugene. 2009. “Institutional Encounters: Identification and Anonymity in Russian Addiction Treatment (and Ethnography).” In *Being There: The Fieldwork Encounter and the Making of Truth*, edited by John Borneman and Abdellah Hammoudi, 201-236. Berkeley, CA: University of California Press.

Rami-Porta, Ramón. 2018. “A Spanish Thoracic Surgeon Visits China—Reflections on the Surgical Treatment of Lung Cancer.” *Journal of Thoracic Disease* 10(2): 718–722.

Rami-Porta, Ramón, Vanessa Bolejack, John Crowley, et al. 2015. “The IASLC Lung Cancer Staging Project: Proposals for the Revisions of the T Descriptors in the Forthcoming Eighth Edition of the TNM Classification for Lung Cancer.” *Journal of Thoracic Oncology* 10(7): 990–1003.

Rami-Porta, Ramón, Hisao Asamura, William D. Travis, and Valerie W. Rusch. 2017. “Lung Cancer — Major Changes in the American Joint Committee on Cancer Eighth Edition Cancer Staging Manual.” *CA: A Cancer Journal for Clinicians* 67(2): 138–155.

Rao, Yi, Runhong Li, and Daqing Zhang. 2011. “Zhongyao de kexue yanjiu fengbei” [A monument in the scientific research on Chinese drugs]. *Science & Culture Review* (04): 27–44.

Rao, Yi, Runhong Li, and Daqing Zhang. 2013. “A Drug from Poison: How the Therapeutic Effect of Arsenic Trioxide on Acute Promyelocytic Leukemia Was Discovered.” *Science China Life Sciences* 56(6): 495–502.

Redfield, Peter. 2002. “The Half-Life of Empire in Outer Space.” *Social Studies of Science* 32(5–6): 791–825.

Research Committee of the Historical Records of Cancer in China. Cancer Research Foundation of China. 2000. *Zhongguo zhongliu shiliao yanjiu* [Research on the historical records of cancer in China]. Beijing: People’s Military Medical Press.

Rheinberger, Hans-Jörg. 1997. *Toward a History of Epistemic Things: Synthesizing Proteins in the Test Tube*. Stanford, CA: Stanford University Press.

Rofel, Lisa. 2015. “Capitalism and the Private/Public Division. Fieldsights—Theorizing the Contemporar.” *Cultural Anthropology Online*. Accessed March 4, 2019. https://culanth.org/fieldsights/capitalism-and-the-private-public-division.

Sacher, Adrian G., Lisa W. Le, and Natasha B. Leighl. 2014. “Shifting Patterns in the Interpretation of Phase III Clinical Trial Outcomes in Advanced Non–Small-Cell Lung Cancer: The Bar is Dropping.” *Journal of Clinical Oncology* 32(14): 1407–1411.

Sandler, A. B., J. Nemunaitis, C. Denham, et al. 2000. “Phase III Trial of Gemcitabine Plus Cisplatin Versus Cisplatin Alone in Patients With Locally Advanced or Metastatic Non–Small-Cell Lung Cancer.” *Journal of Clinical Oncology*. 18(1): 122-130.

Saunders, Barry F. 2010. *CT Suite: The Work of Diagnosis in the Age of Noninvasive Cutting*. Durham, NC: Duke University Press.

Scheid, Volker. 2014. “Convergent Lines of Descent: Symptoms, Patterns, Constellations, and the Emergent Interface of Systems Biology and Chinese Medicine.” *East Asian Science, Technology and Society* 8(1): 107–139.

Scheid, Volker, and Hugh MacPherson. 2012. *Integrating East Asian Medicine into Contemporary Health care*. Edinburgh, UK: Elsevier Churchill Livingstone.

Scheid, Volker. 2002. *Chinese Medicine in Contemporary China: Plurality and Synthesis*. Durham, NC: Duke University Press.

Scheid, Volker. 2007. *Currents of Tradition in Chinese Medicine, 1626-2006*. Seattle, WA: Eastland Press.

Scheper-Hughes, Nancy. 1990. “Three Propositions for a Critically Applied Medical Anthropology.” *Social Science & Medicine* 30(2): 189–197.

Scheper-Hughes, Nancy. 1995. “The Primacy of the Ethical: Propositions for a Militant Anthropology.” *Current Anthropology* 36(3): 409–440.

Schmalzer, Sigrid. 2009. *The People’s Peking Man: Popular Science and Human Identity in Twentieth-Century China*. Chicago, IL: University of Chicago Press.

Schmalzer, Sigrid. 2016. *Red Revolution, Green Revolution: Scientific Farming in Socialist China*. Chicago, IL: University of Chicago Press.

Shao, Jing. 1999. *Hospitalizing “Traditional” Chinese Medicine: Identity, Knowledge and Reification*. University of Chicago.

Shapin, Steven, Simon Schaffer, and Thomas Hobbes. 1985. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life: Including a Translation of Thomas Hobbes, Dialogus Physicus de Natura Aeris*. Princeton, NJ: Princeton University Press.

Shepherd, Frances A., José Rodrigues Pereira, Tudor Ciuleanu, et al. 2005. “Erlotinib in Previously Treated Non–Small-Cell Lung Cancer.” *New England Journal of Medicine* 353(2): 123–132.

Shi, Yuankai, and Yan Sun. 2008. “*Zhongliu neike zhiliao de lishi he fazhan fangxiang*” [History and future of medical oncology]. *Zhongguo zhongliu* 9: 767–774.

Shiyong zhongliuxue bianji weiyuanhui [Editorial Committee for the Practical Study of Neoplasms]. 1978. *Shiyong zhongliuxue* [Practical study of neoplasms]. Beijing: Renmin weisheng chubanshe.

Silverstein, Michael. 2003. “Indexical Order and the Dialectics of Sociolinguistic Life.” *Language & Communication* 23(3–4): 193–229.

Simon, Stacy. 2015. “FDA Approves New Use of Iressa (Gefitinib) for EGFR-Mutated Lung Cancer.” *American Cancer Society*. Accessed March 29, 2019. https://www.cancer.org/latest-news/fda-approves-new-use-of-iressa-gefitinib-for-egfr-mutated-lung-cancer.html.

Sivin, Nathan. 1987. *Traditional Medicine in Contemporary China: A Partial Translation of Revised Outline of Chinese Medicine (1972): With an Introductory Study on Change in Present Day and Early Medicine*. Ann Arbor, MI: University of Michigan.

Solinger, Dorothy J. 2009. *States' Gains, Labor's Losses: China, France, and Mexico Choose Global Liaisons, 1980–2000*. Ithaca, NY: Cornell University Press.

Song, Priscilla. 2017. *Biomedical Odysseys: Fetal Cell Experiments from Cyberspace to China*. Princeton, NJ: Princeton University Press.

Song, Yan. 2018. "Li Keqiang yaoqiü jiben yaowu mulu tiaozheng zhongdian jüjiao aizheng, erke, manxingbing deng bingzhong" [Li Keqiang requires essential medicines list to adjust focus onto cancer, pediatric and chronic disease categories. *Zhongguo zhengfu*. Accessed January 28, 2019. http://www.gov.cn/guowuyuan/2018-09/01/content_5318425.htm.

Star, Susan Leigh, and Karen Ruhleder. 1996. "Steps Toward an Ecology of Infrastructure: Design and Access for Large Information Spaces." *Information Systems Research* 7(1): 111–134.

Star, Susan Leigh. 1999. "The Ethnography of Infrastructure." *American Behavioral Scientist* 43(3): 377–391.

Stengers, Isabelle. 2010a. *Cosmopolitics I*. Minneapolis, MN: University of Minnesota Press.

Stengers, Isabelle. 2010b. *Cosmopolitics II*. Minneapolis, MN: University of Minnesota Press.

State Council. 2016. "'Jiankang Zhongguo' 2030 guihua gangyao" [Planning Guidelines for "Healthy China 2030"]. *Zhongguo zhengfu*. Accessed January 27, 2019. http://www.gov.cn/zhengce/2016-10/25/content_5124174.htm.

Su, Shan, and Yi-Long Wu. 2017. "Clinical Trials of Tyrosine Kinase Inhibitors for Lung Cancer in China: A Review." *Journal of Hematology & Oncology* 10(1).

Sunder Rajan, Kaushik. 2006. *Biocapital: The Constitution of Postgenomic Life*. Durham, NC: Duke University Press.

Sunder Rajan, Kaushik. 2005. "Subjects of Speculation: Emergent Life Sciences and Market Logics in the United States and India." *American Anthropologist* 107(1): 19–30.

Sunder Rajan, Kaushik. 2007. “Experimental Values: Indian Clinical Trials and Surplus Health.” *New Left Review* 45: 67–88.

Sunder Rajan, Kaushik. 2012a. “Pharmaceutical Crises and Questions of Value: Terrains and Logics of Global Therapeutic Politics.” *South Atlantic Quarterly* 111(2): 321–346.

Sunder Rajan, Kaushik. 2012b. *Lively Capital: Biotechnologies, Ethics, and Governance in Global Markets*. Durham, NC: Duke University Press.

Tai, Patricia, Jon Tonita, Edward Yu, and David Skarsgard. 2003. “Twenty-Year Follow-up Study of Long-Term Survival of Limited-Stage Small-Cell Lung Cancer and Overview of Prognostic and Treatment Factors.” *International Journal of Radiation Oncology*Biology*Physics* 56(3): 626–633.

Taussig, Michael T. 1980. “Reification and the Consciousness of the Patient.” *Social Science & Medicine. Part B: Medical Anthropology* 14(1): 3–13.

Taylor, Kim. 2005. *Chinese Medicine in Early Communist China, 1945-63: A Medicine of Revolution.* New York, NY: Routledge.

Thatcher, Nick, Alex Chang, Purvish Parikh, et al. 2005. “Gefitinib plus Best Supportive Care in Previously Treated Patients with Refractory Advanced Non-Small-Cell Lung Cancer: Results from a Randomised, Placebo-Controlled, Multicentre Study (Iressa Survival Evaluation in Lung Cancer).” *The Lancet* 366(9496): 1527–1537.

Thompson, Charis. 2005. *Making Parents: The Ontological Choreography of Reproductive Technologies*. Cambrige, MA: MIT Press.

Throop, C. Jason and Keith M. Murphy. 2002. “Bourdieu and Phenomenology: A Critical Assessment.” *Anthropological Theory* 2(2): 185–207.

Timmermann, Carsten. 2014. *A History of Lung Cancer: The Recalcitrant Disease*. London: Palgrave Macmillan UK.

Tomasetti, Cristian, Lu Li, and Bert Vogelstein. 2017. “Stem Cell Divisions, Somatic Mutations, Cancer Etiology, and Cancer Prevention.” *Science* 355(6331): 1330–1334.

Tsing, Anna Lowenhaupt. 2015. *The Mushroom at the End of the World : On the Possibility of Life in Capitalist Ruins*. Princeton, NJ: Princeton University Press.

Tu, Youyou. 2016. “Artemisinin—A Gift from Traditional Chinese Medicine to the World (Nobel Lecture).” *Angewandte Chemie International Edition* 55(35): 10210–10226.

Union for International Cancer Control. 2009. *TNM Classification of Malignant Tumours. 7th ed*. Hoboken, NJ: Wiley-Blackwell.

Union for International Cancer Control. 2016. *TNM Classification of Malignant Tumours. 8th ed*. Hoboken, NJ: Wiley-Blackwell.

Union for International Cancer Control. 2017. “What Is TNM?” *UICC Resources*. Accessed March 5, 2019. https://www.uicc.org/resources/tnm.

Unschuld, Paul U. 2003. *Huang Di Nei Jing Su Wen: Nature, Knowledge, Imagery in an Ancient Chinese Medical Text, with an Appendix, The Doctrine of the Five Periods and Six Qi in the Huang Di Nei Jing Su Wen.* Berkeley, CA: University of California Press.

Unschuld, Paul U. 2016. *Huang Di Nei Jing Ling Shu: The Ancient Classic on Needle Therapy*. Berkeley, CA: University of California Press.

United States Food and Drug Adminsitration. 2018. “The Drug Development Process – Step 3: Clinical Research.” Accessed March 17, 2019. https://www.fda.gov/ForPatients/Approvals/Drugs/ucm405622.htm.

van der Geest, Sjaak, and Kaja Finkler. 2004. “Hospital Ethnography: Introduction.” *Social Science & Medicine* 59(10): 1995–2001.

Waldby, Catherine, and Brian Salter. 2011. “Biopolitics in China An Introduction.” *East Asian Science, Technology and Society* 5(3): 287–290.

Wang, Bing and Xiaohang Tian. 2018. “Yi “baxiang” gaige huajie minshen tongdian zhongguo kang’ai yao lingguanshui chuandi sanda xinghao” [Resolving pain-spots of the people’s livelihood through reforming “targeted” therapies, three signals toward zero tariffs for anti-cancer drugs]. *Xinhua News*. Accessed January 11, 2019. http://www.gov.cn/zhengce/2018-05/02/content_5287316.htm.

Wang, Hui. 1995. “The Fate of ‘Mr. Science’ in China: The Concept of Science and Its Application in Modern Chinese Thought.” *Positions: East Asia Cultures Critique* 3(1): 1–68.

Wang, J. B., Y. Jiang, H. Liang, et al. 2012. “Attributable Causes of Cancer in China.” *Annals of Oncology* 23(11): 2983–2989.

Wang, Junping. 2012. “Qicheng zhongchengyao you xiyi yishi kaichu buheli shiyonglü gaoda sicheng” [Seventy percent of patent Chinese medicines are prescribed by Western medicine clinicians; inappropriate prescribing as high as 40 percent]. *People’s Daily Online*. Accessed March 9, 2019. http://news.163.com/12/0417/04/7V91JUKS00014AED.html.

Wang, Shuhang, Yongping Song, and Delong Liu. 2017. “EAI045: The Fourth-Generation EGFR Inhibitor Overcoming T790M and C797S Resistance.” *Cancer Letters* 385: 51–54.

Wang, Shuhang, Yongping Song, Feifei Yan, and Delong Liu. 2016. “Mechanisms of Resistance to Third-Generation EGFR Tyrosine Kinase Inhibitors.” *Frontiers of Medicine* 10(4): 383–388.

Wang, Weide. 2009 [1740]. *Waike zhengzhi quansheng ji* [Complete Guide to the Diagnosis and Treatment of External Diseases]. Beijing: Beijing Ai ru sheng shu zi hua ji shu yan jiu zhong xin.

Wapner, Jessica. 2013. *The Philadelphia Chromosome: A Mutant Gene and the Quest to Cure Cancer at the Genetic Level.* New York, NY: The Experiment, LLC.

Weber, Max. 1958. *From Max Weber: Essays in Sociology.* Edited by H. H. Gerth and C. Wright Mills. New York: Oxford University Press.

Weber, Max. 2019. *Economy and Society: A New Translation*. Keith Tribe, trans. Cambridge, MA: Harvard University Press.

Wee, Sui-Lee. 2018. “In China, Desperate Patients Smuggle Drugs. Or Make Their Own.” *The New York Times*, November 11. Accessed January 28, 2019. https://www.nytimes.com/2018/11/11/business/china-drugs-smuggled-homemade.html.

Wei, Chunjuan Nancy, and Darryl E. Brock. 2013. *Mr. Science and Chairman Mao’s Cultural Revolution: Science and Technology in Modern China*. Lanham, MD: Rowman & Littlefield.

Wu, Yi-long. 2004. “Fei’ai fenzi baxiang zhilioa de getihua” [Personalization of lung cancer targeted therapies]. *The Journal of Evidence-Based Medicine* 2(3): 67-68

Wu, Yu, Minyu Jiang, Huixun Jiang, et al. 2015. “Zhongguo dalu bufeng yiyuan aizheng zhenliao moshi he linchuang fenqi shiyong qingkuang de diaocha” [Report on the status of cancer diagnostic models and use of clinical staging in a segment of hospitals in mainland China]. *China Oncology* 25(01): 67–72.

Xiang, Biao. 2013. Multi-Scalar Ethnography: An Approach for Critical Engagement with Migration and Social Change. Ethnography 14(3): 282–299.

Xue, Bingni, Yuanyuan Xie, Linyue Wu, et al. 2015. “Wu Yilong jiaoshou: Fei’ai youwang bian manxingbing” [Professor Wu Yilong: There is hope for lung cancer to become a chronic disease]. *Sciencenet*. Accessed March 17, 2019. http://news.sciencenet.cn/htmlnews/2015/8/325400.shtm.

Yang, Nianqun. 2006. *Zaizao “bingren”: zhongxiyi chongtuxiade kongjian zhengzhi (1832-1985)* [Remaking “Patients”: Politics of Space in the Conflict between Chinese and Western Medicine]. Beijing, China: Zhong guo ren ming da xue chu ban she.

Yip, Winnie Chi-Man, William C Hsiao, Wen Chen, et al. 2012. “Early Appraisal of China’s Huge and Complex Health-Care Reforms.” *The Lancet* 379(9818): 833–842.

Yip, Winnie Chi-Man, William Hsiao, Qingyue Meng, Wen Chen, and Xiaoming Sun. 2010. “Realignment of Incentives for Health-Care Providers in China.” *The Lancet* 375(9720): 1120–1130.

Yip, Winnie and William C. Hsiao. 2008. “The Chinese Health System at a Crossroads.” *Health Affairs* 27(2): 460–468.

Yip, Winnie and William Hsiao. 2014. “Harnessing the Privatisation of China’s Fragmented Health-Care Delivery.” *The Lancet* 384(9945): 805–818.

You, Tianyi. 2018. “ ‘Wobushi yaosheng’ yuanxing Lu Yong: wo zhishi ge huanzhe, bushi ‘yaoxia’” [Lu Yong, the model for *Dying to Survive*: Only a patient, not a ‘drug vigilante’]. *The Beijing News*. Accessed March 15, 2019. http://www.chinanews.com/sh/2018/07-06/8557942.shtml.

Young, A. 1982. “The Anthropologies of Illness and Sickness.” *Annual Review of Anthropology* 11(1): 257–285.

Yuan, Duanduan. 2016. “Xinyao yingjin dengbuqi, dixiazhishouboshengji zizhijiumingyao” [Can’t wait for the importation of new drugs, fighting for a chance through underground

development, self-manufacturing of life-saving cures]. *Southern Weekly,* August 25. Accessed January 28, 2019. http://www.infzm.com/content/119144.

Yver, A. 2016. "Osimertinib (AZD9291)—a Science-Driven, Collaborative Approach to Rapid Drug Design and Development." *Annals of Oncology* 27(6): 1165–1170.

Zhan, Mei. 2009. *Other-Worldly: Making Chinese Medicine through Transnational Frames*. Durham, NC: Duke University Press.

Zhan, Mei. 2011. "Human Oriented? Angels and Monsters in China's Health-Care Reform." *East Asian Science, Technology and Society* 5(3): 291–311.

Zhan, Mei. 2014. The "Empirical as Conceptual: Transdisciplinary Engagements with an 'Experiential Medicine.'" *Science, Technology, & Human Values* 39(2): 236–263.

Zhan, Mei. 2016. "Cosmic Experiments: Remaking Materialism and Daoist Ethic 'Outside of the Establishment.'" *Medical Anthropology* 35(3): 247–262.

Zhang Jianfang. 2006. *Chidao de baogao: wu'ersan xiangmu ye qinghaosu yanfa jishi* [A Belated Report: A detailed chronological record of Project 523 and the discovery and development of qinghaosu (artemisinin)]. Guangzhou: Yangcheng wanbao chubanshe.

Zhang, Jinyuan. 2015. *Zhang Daizhao xüeshu pingzhuan* [Tales and Commentaries of Zhang Daizhao's Scholarship]. Beijing: Zhongguo mangwen chubanshe.

Zhang, Tingdong and Fuxiang Rong. 1979. "Ailing yihao zhusheye yu bianzheng lunzhi zhiliao jixing lixibao xing baixuebing" [Ailing-1 Injection and Pattern Differentiation and Treatment Designation in the Treatment of Acute Myelocytic Leukemia]. *Heilongjiang Medicine* (4): 7–11.

Zhang, Yanhua. 2007a. "Negotiating A Path To Efficacy at a Clinic of Traditional Chinese Medicine." *Culture, Medicine and Psychiatry* 31(1): 73–100.

Zhang, Yanhua. 2007b. *Transforming Emotions with Chinese Medicine: An Ethnographic Account from Contemporary China*. Albany, NY: State University of New York Press.

Zhao, Hongjun. 2012. *Jindai zhongxiyii zhenglün shi* [History of Modern Controversies over Chinese vs. Western Medicine]. Beijing, China: Xüeyuan chubanshe.

Zheng, Rongling. 2011. “1911-2011, xiandai zhongguo kangji zhongliu bainian lishi huigu yu zhanwan” [1911-2011, reflections on one hundred years of anti-cancer history in modern China]. *Zhonghua yixuehui zhongliuxue fenhui diqiqi quanguo zhongqingnian zhongliu xueshu huiyi lunwen huibian*: 183–186.

Zhou, Daihan, ed. 2007a. *Zhongyi zhongliu xue* [Chinese Medical Oncology]. Guangzhou: Guangdong gaodeng jiaoyu chubanshe.

Zhou, Daihan. 2007b. “Lun zhongyi zhongliu de lishi, xianzhuang yu weilai” [On the history, present and future of Chinese medical oncology]. *World Chinese Medicine* (1): 6–7.

Zhu, Jun, Zhu Chen, Valérie Lallemand-Breitenbach, and Hugues de Thé. 2002. “How Acute Promyelocytic Leukaemia Revived Arsenic.” *Nature Reviews Cancer* 2(9): 705–714.

Zito, Angela, and Tani E. Barlow. 1994. Body, Subject, and Power in China. Chicago, IL: University of Chicago Press.

Zou, Jincan. 2018. “Yi xia Wu Yilong” [Medical Vigilante Wu Yilong]. *The Souther Weekend Peoples*. Accessed March 9, 2019. http://www.nfpeople.com.