EDITED BY
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MORAL FOODS

The Construction of Nutrition and Health in Modern Asia

Moral Foods



Series Editors:

Christine R. Yano and Robert Ji-Song Ku

Moral Foods

THE CONSTRUCTION OF NUTRITION AND HEALTH IN MODERN ASIA

Edited by Angela Ki Che Leung
and Melissa L. Caldwell



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Angela Ki Che Leung and Melissa L. Caldwell

Moral Foods

Introduction

Food and Health: Fortification and Modern Asian State Making

Melissa L. Caldwell
and Angela Ki Che Leung

In today's world, the centrality of food to health is often taken for granted, as health care practitioners, dieticians, pharmaceutical and industrial food manufacturers, activists, and ordinary consumers alike use foods and food-based products both to treat ailments and to cultivate desirable physical and mental traits. Yet the connections that are presumed to exist between health and food are not, in and of themselves, absolute, natural, or even logical. Nor are these connections necessarily universal or even constant through history. Rather, the mutual intertwining of food and health has always been deeply embedded within cultural ideals about what those qualities and associations *should* be.[1] In turn, those ideals are situated at particular nexuses of political ideologies, economic realities, cultural practices, and historical moments. Consequently, to focus solely on the perceived curative aspects of food is to overlook the fact that, at their core, food-related health systems are intrinsically moral regimes that shape and define social worlds and the subjects who inhabit them.

Modern nations and nation-states have long recognized and mobilized the moral capacity of food-related health systems, such as when they set nutritional policies that influence or dictate what their citizens consume. These approaches are perhaps most evident in institutionalized feeding programs for children, soldiers, athletes, and prisoners, but they also appear in more mundane practices such as labeling and advertising, placement of products in shops or markets, and even pricing. At the same time, federal policies and inefficiencies may even prevent—either deliberately

or accidentally—what people can consume, as has happened with wartime deprivations, manmade famines, and embargoes against imports throughout the world.[2] Individual citizens, for their part, can display personal ideologies and patriotic allegiances by consuming domestic products and other foods that are associated with national or regional values.[3] In other instances, nation-states have sought to produce and reproduce themselves through closed recirculations across the food cycle: from agricultural product to consumer goods to biological byproduct (waste) that is then turned back into the soil that will generate new food. For instance, in China, traditional methods of recycling excrement through the agricultural production and consumption process continued into the modern period as citizens' "night soil" was collected and used as fertilizer on state farms.[4] More recently, Shinto-based Japanese agricultural development programs in Myanmar use farmworkers' waste as fertilizer for crops, thereby promoting not only ideas of sustainable production and consumption but also particular social relations among producer-consumers who are producing and consuming one another's bodily byproducts.[5]

When empires, nations, citizens, and subjects connect in very tangible ways the health of individual persons with the health of the community, the nation, the state, and the empire, the roles and relationalities that shape and constitute governments and citizens are transformed. As such, the connections that cohere between food and health reveal a complicated nexus of identity, personhood, social interaction, and critical historical transitions. Ultimately, what it means to be a good, virtuous, and even productive person, family member, community member, or citizen is deeply enmeshed in how food and health are imagined, constituted, provisioned, and managed.

This volume takes seriously the ways in which food-related health practices are, at their core, moral regimes that shape ideal subjects and states. By focusing on the place of food in changing health regimes in modern Asia, the contributors to this volume examine not just the moral systems in which food and health are embedded but also the social and political values that have shaped modern Asian societies. Specifically, by analyzing the cultural, political, economic, and historical dynamics through which moral values have been assigned to foods, bodies, citizens, and states, this volume documents how consumers—as well as their bodies and their palates—in modern Asia were conscripted into national and global projects of state making. Ultimately, as these chapters show, eating is a process of fortifying both the nation and its subjects.

Healthy Societies and Modern Asian Food Systems

Modern Asian societies offer a particularly productive lens for understanding how food and health systems have come to be made moral, for what reasons, and with what effects. It is not coincidental that one of the foundational strands of contemporary food studies research in history and anthropology has come out of research on Asia, especially by scholars of East Asia who have been concerned with the significance of food in daily life in societies under profound cultural, political, and economic change.[6] As these scholars have documented, food has long been a marker and conduit for social norms, social differentiation and leveling, ritual practices, economic currency, regional and transnational expansion and consolidation, and claims on heritage and cultural distinctiveness, among many other social phenomena.

More broadly, there are a number of cultural practices that transcend East Asia and connect food cultures in this region to those in other Asian societies. One of the most significant of these connective themes is the experience of local communities with Western powers, most notably experiences with colonialism and postcolonialism. Although colonial and postcolonial projects have taken multiple forms across Asia, reflecting the particular geopolitical contexts that have existed at different moments throughout this region, a common feature of the colonial experience has been the entanglement of food and health with projects of state building. On the one hand, colonial powers' emphasis on economic power was often manifest in concerns with foods, whether it was in the desire to protect the integrity and value of foodstuffs that were circulated as global trade commodities or in the need to ensure the health and vitality of the workers who were responsible for doing the work of colonial empires. On the other hand, ordinary people interacted with colonial authorities through food practices. Two striking examples come from Taiwan's experience with Japanese occupation. Shortly after Japan's occupation of Taiwan in 1895, and then later following World War I, Japanese beers flooded the Taiwanese market and even inspired what is today one of Taiwan's most recognizable domestic beers.[7] Similarly, colonial Taiwan "modernized" traditional homemade soy sauce in the early twentieth century by using Japanese industrially premade koji ferment and imported Japanese soy beans to replace indigenously grown black beans. This process slowly changed both the

taste of the product and consumers' expectations about what constituted domestic soy sauce, until more recently, when "going back" to black beans has come to constitute a new Taiwanese identity.[8] Collectively, these experiences offer productive comparative vantage points not simply for understanding food-health connections but also for thinking about how Asianness and Asian cultures have been constructed in and across particular times and places.

This comparative dimension across time and space informs this volume's focus on modern Asia, as exemplified by Francesca Bray's opening chapter on the significance of rice for national identity processes in Japan and Malaysia. By comparing how these two countries have chosen to promote domestic rice production over less expensive imports, Bray shows how a single food—rice—that has otherwise been characterized as a defining feature of a homogenous Asian identity takes on very different values and roles across the "Asian" landscape. Similarly, Robert Peckham's analysis of the efforts of colonial authorities in Hong Kong to "clean up" the food system, largely through projects of civic hygiene in food spaces used by local residents, situates colonial attitudes toward Chinese subjects within the larger context of colonial projects elsewhere in Asia. In this case, Hong Kong is a nexus between East Asia and South Asia. Building on Bray's and Peckham's comparative attention to the interplay of transnational geopolitics, broader regional trends, and very particular cultural experiences, the chapters in this volume engage one another and collectively shed light on the ways in which different Asian societies have responded to Western neoliberal approaches to food, bodies, and the state.

With colonialism and Asian societies' responses to Western powers as a common backdrop, the importance of food and health as defining features of modern Asia becomes especially significant. Traditional Asian cultural practices that imagined the human body in terms of deficiency/excess have associated a presumed state of bodily imperfection with the presumed imperfections of sociopolitical systems. Concomitantly, traditional Asian health systems did not distinguish between food and medicines but rather understood foods' nutritive qualities as having medicinal qualities that could bring about different bodily states of health. In other words, food was medicine and could function as either remedy or replacement.[9] Within Asian cultural traditions of health, individual foods and medicines are understood to be relational by virtue of possessing either yin or yang qualities of hot or cold, dry or wet, poisonous or nonpoisonous,

restorative or depleting, and so on. As such, individual foods and medicines exert either positive or negative effects on a body that is constantly striving to strike a precarious yin/yang balance. The desirability and efficacy of foods thus depends greatly on the shifting condition of the carnal, social, and moral body.[10]

Typologies of depletion and excess also existed at the scale of the nation-state. When most parts of Asia, China in particular, became "lands of famine" in the eyes of Western powers in the modern, colonial period in the late nineteenth and early twentieth centuries, deficiency was expressed in the modern scientific language of biochemical nutrition.[11] Discourses about the moral uses of food shifted accordingly from personal concerns with hygiene to state-level concerns with social, national, and racial health. One consequence of these associations between foods and health, and between individual bodies and larger sociopolitical systems, was that technologies of oral consumption, including both food and medicine, were envisioned as practices by which individuals could "exert some control in the world."[12]

In the twentieth century, the food-health nexus became especially significant as a medium for documenting and understanding dramatic political, cultural, environmental, and technological innovations across Asia. Wartime atrocities such as those during the Second Sino-Japanese War, the Korean War, and the Vietnam War, have been told through accounts of deprivation and starvation, survival provisioning, and military diets.[13] Accounts of the spread of communism and the particular realities of daily life under state socialism across this region have also been told through food, whether that has been in the form of attention to the simultaneous devaluation and revaluation of agricultural production as both the wealth of the new communist nation and as an appropriate form of punitive labor to reeducate people with "dangerous" political views, or through the ways in which food shortages and food deprivation were both intentional and unintentional consequences of the new communist bureaucratic system.[14]

Most recently, in the wake of the simultaneous collapse of the Soviet communist Bloc and the expansion of an American-centered imperialist capitalism, food and health have become prominent themes through which to understand an array of issues linked to the spread of global capitalism and the reorganization of geopolitical power across Asia: changing cultures of taste, aesthetics, and performance; the revival of "heritage" foods and the incorporation of "foreign" foods; and new modes of sociality,

among many others.[15] Asian food systems are, in many ways, simultaneously undergoing profound industrialization with the adoption of new manufacturing technologies while also witnessing a resurgence of "traditional" farming, food provisioning, and consumption practices.[16] These paradoxical trends are mirrored in health trends, as consumers across Asia alternately embrace new classifications and combinations of "traditional," "scientific," and even Western-biomedical health, ranging from practices such as traditional Chinese medicine, vegetarianism, and organics to scientifically manufactured vitamins and milk powder, nutraceuticals, and cosmetic surgery.[17]

As a result, the paradoxical nature of "modern" Asian societies and their citizens is realized directly in food and health, particularly as they are made manifest in the very bodies of citizens. Food and health become markers of strong bodies, weak bodies, and deserving bodies, as well as the values assigned to colored bodies, gendered bodies, and aged bodies. Food and health, then, are never neutral categories but are always imbued with moral qualities.

The Moralities of Asian Foods

Of all the structuring systems at play in Asian moralities, cultural values informing modes of personhood are among the most significant. Qualities defining a "person" (age, sex, gender, class, economic background, legal status) and that person's place within society (full member, subject, elite, worker, slave) form the backbone of the official and unofficial social orders that have constituted Asian societies. Within these personhood regimes, selfhood has been an especially powerful theme, as individuals and communities have struggled to articulate values of belonging, rights, responsibilities, and worth.

Food has long expressed selfhood and distinction at multiple scales, with rice standing out as the most obvious, powerful, and intriguing. In her work on Japan, Emiko Ohnuki-Tierney identified "rice as self" as a fundamental marker of Japanese identity and distinctiveness, at both the personal and the national level.[18] Yet as other scholars have observed, rice has been a key identity marker across Asia, especially as a symbol of ideal societies.[19] Across Asia, rice eating has been held up as an explanation for the unique physical and cultural qualities of Asian peoples, including such

claims as their large populations, extraordinary physical endurance, and resistance to epidemics.[20] By contrast, Western imperialists in the nineteenth and twentieth centuries believed that the "malnutrition" problem they identified in Asian colonies was the direct result of Asians' high consumption of rice.[21] For instance, beriberi, a vitamin deficiency disease that was common across most parts of Asia in the late nineteenth century, was associated with mechanically polished rice, which was considered a kind of modern "junk food."[22] Rice subsequently became a Western imperialist symbol for negative racial stereotypes about Asian societies.[23] However, Asian scientists of this period did not fully endorse this association of rice with ill health, and after World War II, even some Western scientists began questioning it.[24] This prompted the development of high-profile, state-sponsored scientific research to increase and improve rice production and policy across Asia.[25]

The antithesis of rice in the colonial period was American meat, a striking symbol of Western power. The title of the 1906 booklet "Meat vs Rice: American Manhood and Chinese Coolieism" by the American Federation of Labor details a perceived American "natural desire" for meat as a food for a strong, masculine state in contrast to what was presented as the inferior quality of rice as food for a humiliated, subjugated race.[26] In the early twentieth century, the presumed superiority of meat was articulated primarily in terms of the alleged nutritional and cultural value of animal protein, an idea that was central in the biochemical nutritional sciences that were emerging at that time. This idea was frequently cited to incriminate largely vegetarian Asian foods for producing poor national health.[27] In this modern global era of keen industrial and military competition, only foods rich in animal protein were deemed capable of maximizing human energy and improving racial character.

Western nutritional science thus profoundly challenged traditional Asian systems of nutritional health and food hygiene. In China, dietetic recommendations had been modeled on the ideal literati lifestyle and knowledge on materia medica that matured in the Ming period (1368–1644). Although in that traditional system tea was one of the most studied and refined drinks and epitomized the highest gastronomic pleasure most befitting the somatic hygiene for the cultivated classes, its poisonous content was not emphasized until very recently.[28] Similarly, traditional Indian famine foods that were long considered by local communities to be safe were now viewed by colonial doctors and scientists as poisonous.[29]

Modern nutritional science's concern with protein was also instrumental in transforming traditional Asian foods into modern versions that conformed to biochemical definitions of "good" foods. Milk, for instance, which was traditionally a rare and precious culinary and medicinal ingredient in China and many parts of Asia, was promoted as a health food in urban Asia.[30] At this same time, breastfeeding was also transformed into a moral act of motherhood.[31] The high protein value placed on cow's milk in this period created an increasing desire for this "superior" food in Asia, which then led to its transformation via modern technological intervention to fit Asian consumers' needs and tastes.[32]

Asian fixations on protein also drew attention to another traditional Asian food: the soybean. While the consumption of soybean products made through sophisticated processing technologies has been widespread in Asia since antiquity, the high value given to soy milk and bean curds as star Asian foodstuffs in the modern period came about as their nutritional value was compared to that of cow's milk and meat.[33] The soybean benefited further because it was considered an indigenous Asian food. Sun Yat-sen, who was the father of the Chinese Republic and a physician with Western medical training, identified the soybean as a national food. The production, research, development, and consumption of soybeans was included in China's nation building project in the early twentieth century.[34]

Ultimately, states, science and technology regimes, and local communities participated in projects to determine the criteria by which foods were defined as "good," "bad," "desirable," "undesirable," "productive," or "unproductive." As such, this became a system of regulating and even controlling local communities and their cultural practices. Consequently, the ability of individuals to determine their own eating practices—what is often understood as the ability of individuals to exercise choice—was influenced by other forces, including official state bodies and policies. In many respects, defining and promoting "good" foods became a responsibility of the modern Asian governments, just as it was for their Western counterparts in this period.

Moreover, as these examples show, biomedical nutritional science did not destroy the identity building power of "traditional" foods but instead created new, modern "national" health foods. The knowledge derived from biochemical nutritional science armed modernizing Asian states with the necessary scientific vocabulary to impose norms. The Nobel Prize in physiology given to Frederick Gowland Hopkins and Christiaan Eijkman in

1929 for their contribution to the discovery of vitamins marked the ascendancy of biomedical nutritional science in the global conceptualization of food policy.[35] More broadly, during the 1920s and 1930s in China and India, as elsewhere in Asia, traditional dietetic notions of deficiency or depletion were now explained in terms of lack of "digestible" proteins, minerals, or vitamins that were easily quantifiable in chemical symbols to justify direct state intervention. During periods of national crises, such as the Second Sino-Japanese War in China, the Chinese state's role was further expanded to provide sufficient nutrition to the military fighting in regions with limited food supplies.[36]

The Chinese government's approach mirrored that of the US government. In the 1930s, China and the United States both experienced the emergence of domestic science in universities as a mode by which citizens, especially women, were trained in new food and health knowledge.[37] One such piece of knowledge common to both countries was the instruction to housewives to "prepare organ meats for their husbands and children to battle against weak blood." Continuing this theme, American president Herbert Hoover declared in 1943 that "meats and fats are just as much ammunitions in this war as are tanks and aeroplanes."[38] Thus, states and their proxies played a key role in defining what were "good" staples for the nation by setting tax and trade policies regulating the domestic and international markets through which foods circulated and by controlling the quantifiable levels of toxicity contained within particular foodstuffs.[39]

State interventions in people's food and eating habits reached an extreme in the late 1950s in the People's Republic of China with the creation of the "public mess hall" (e.g., canteens) system in the countryside during the Great Leap Forward movement.[40] Public canteens represented the thorough collectivization of food and eating by abolishing individualized—that is, family—cooking under the rationale that a fully socialized and public system of food provision would improve both hygiene and nutrition for all citizens. The emphasis on clean utensils and on ingredients in hot soups and other foods conveyed a philosophy of "eat well, eat full" that was also a not-so-subtle political statement about the need to use nutritional sanitation as a technique to "civilize" China's backward populations.

At another extreme was the example of the "kitchen pharmacist," a Taiwanese woman who made a brilliant career in Japan and Taiwan in the 1970s and 1980s by teaching and promoting home cooking, primarily to housewives, using traditional medicine for the purpose of preventing

cancers and slowing down aging. Her success demonstrates the powerful role of women as housewives when they become skillful players in the media and commercial market in setting reinvented norms of good foods and health in Asia, mixing traditional medical concepts with Western physiological knowledge.[41] Such developments highlight the unique position of Asian women in the modern period. Sporting labels such as the "good wife, wise mother," a modern East Asian ideal of the woman initially framed in Japan, women enjoyed new status and authority as caretakers and sources of information on health and nutrition.[42]

What these examples reveal is that the moralities associated with food and health became powerful tools for promoting and realizing values and practices of strong subjects that, in turn, were fundamental to the creation of new civic identities and roles for modern Asian states. Above all, attention to food and health reveals how Asian societies have tackled critical issues of identity in processes of modernization.

Overview and Structure of Book

The intersection of these developments from traditional practices, colonial regimes, postcolonial states, and scientific and technological industries facilitated a distinctive set of modern Asian cultural norms, rules, and identities regarding the place of food in changing health regimes. These are the subjects of the chapters that comprise this volume. The volume is organized around a series of key themes and debates that trace the ways in which foods came to be established as moral entities, the ways in which these moral food regimes reveal emerging systems of knowledge and enforcement, and ultimately how these developments have contributed to new Asian nutritional knowledge regimes. Although East Asian societies are more prominent in this volume, the collection's focus on cross-cultural and transhistorical comparisons across Asia brings into view a broader spectrum of modern Asia that extends from Chinese communities to Japan and Korea, into Malaysia and India, as well as into global communities of Western knowledge, practice, and power outside Asia. Even as individual chapters critically examine food-health regimes in modern Asia, they collectively contribute to larger inquiries into the nature of colonial Asia.

The first section, "Good Foods," focuses on how modern Asian food norms and rules were established. By asking questions such as who defined

what made foods good and according to what types of criteria, the contributors examine the processes by which standards and values of the person, the body, and society more generally were created and enforced, and how these activities reveal the dynamics by which expertise and authority were cultivated, promoted, and enforced. What links these concerns is a focus on how nutritional practices were understood to cultivate particular types of desirable bodies and people and, in turn, how these models of the person corresponded to Asian nations' imagination of modernity. Good food produced good bodies, which in turn produced good societies and nation-states. Yet these ideas about "good foods" and "good bodies" shifted at different moments, in some cases privileging local foods and knowledge systems, and at others privileging foreign foods and knowledge systems. Moments of transition, when the presumed sources of authority were challenged or even upended, are also critical moments of historical transition.

Francesca Bray's chapter opens the conversation through a detailed inquiry into how rice became a material symbol of selfhood in Japan and Malaysia. This comparative case study illuminates how locally specific cultural values, political systems, and food types shape very different associations between food and identity, so that despite the fact that rice is a common food across Asia, it has contributed to very different national and regional identities. As Bray's discussion shows, what qualifies as "good" and for whom depends on the particularities of how different societies use that food.

Jia-Chen Fu takes up this theme of how goodness is related to cultural specificity in her chapter on soy milk in China, with attention to how the Chinese nation sought to position itself within a global cultural and political hierarchy. While Western countries promoted cow's milk as intrinsic to their success as modern nations with healthy, civilized citizens, China looked to find alternatives that were more culturally appropriate to their own histories and values. Soya emerged as a compelling "good" food as Chinese began exploring nondairy possibilities that were believed to be better suited to China and Chinese people in their quest for modernity.

Continuing with the example of milk, Izumi Nakayama takes a different angle by considering how breast milk emerged as a "good" food in Meiji Japan. Here, however, it was the idea of proper nutrition and women's proper roles as providers for their children that was emphasized in Japan's modernization strategies. In other words, it was not just a particular food that was valued as "good" but, more significantly, the person who provided

that food—in this case, mothers, rather than wet-nurses or other caregivers. What becomes clear is that the production and reproduction of the modernizing (or modern) nation depends on both "good" foods and "good" food providers.

Lastly, themes of proper nutrition and proper providers of nutrition come through clearly in Michael Liu's chapter on wartime nutrition. Liu examines how the Chinese government in the late 1930s and early 1940s worked to come up with new nutritional plans to feed the military as part of bolstering and strengthening the country's wartime might. Unlike other Asian countries' efforts to constitute national diets and national bodies in distinction to "foreign" bodies by focusing on local foods and practices, in this case it was the perceived strengths of the Western military—most notably American soldiers, given that the United States was China's major ally in this war—that provided the inspiration and policies for Chinese nutritional tactics.

The second section, "Bad Foods," focuses on what makes foods "bad" and even "dangerous." As the contributors to this section show, "bad" foods were not simply unpleasant or undesirable for aesthetic or sensory reasons; rather they hindered the stability and development of the person and society more generally. "Bad" foods were symbolically polluting, as in the case of foreign foods that threatened to replace traditional foods, and they could destabilize and even damage the strength of the nation and its people by weakening their bodies. Toxicity and disease thus emerged as anxieties that needed to be managed and eliminated in order to preserve healthy and strong citizens and states. In some cases, these were the worries of Asian states themselves, and in others they were the worries of colonial authorities who needed to safeguard the labor power and resources of the societies on which they depended for their global economic and political power.

David Arnold's chapter on rice takes us directly into the issues surrounding the perceived lack of healthfulness of a staple to Asian diets: rice. Despite the pervasiveness of rice across Asian societies, either as a necessity for daily provisioning or as an essential element in national cuisine, Western colonial powers viewed it as a nutritionally and culturally poor foodstuff. British colonial authorities in India drew on Western medical expertise that associated rice with nutritional diseases such as beriberi, with the result that rice eating was connected with negative racial stereotypes about Indians. To eat rice, then, was to identify oneself as inferior—physically and culturally—to the British colonials.

Tae-Ho Kim extends this discussion by comparing rice with two additional grains—barley and wheat—in South Korea during the twentieth century. As Kim documents, at different moments, these three grains enjoyed preferential status, depending on whether they were believed to be "good" and "healthy" for nourishing strong Korean bodies or "poisonous" and liable to destroy the bodies of citizens and, by extension, the state. The development of modern agriculture and technology emerged as important elements in Korean public health regimes, with the result that the government deployed agricultural and nutritional scientists as arbiters and protectors of civic concerns.

Dangerous foods that were believed to lead to the breakdown and even collapse of society were also an issue in Japan, as Tatsuya Mitsuda documents in his chapter on sweet snack foods. At the end of the nineteenth century and into the early twentieth century, confections emerged as a source of particular anxiety for Japanese who were concerned with their place in a global moral hierarchy, especially their relationship to Western societies. In the case of confections, it was both the ingredients—specifically an excess of sugar as in Western confections—and the methods of preparation that were potentially dangerous and could prevent Japan from achieving modernization. Snack foods were not merely pleasurable or light accompaniments to an otherwise normal diet but could derail an entire nation if not made or consumed appropriately.

Themes of national governance through regulation of dangerous foods come through strongly in Robert Peckham's chapter on colonial public health programs for food preparation in Hong Kong. In this case, between the late nineteenth and early twentieth centuries, colonial authorities implemented civic hygiene programs to clean up slaughterhouses and markets. Although the goal was to prevent the spread of tainted milk and meat, among other foods, these programs were in fact civilizing projects aimed at teaching local Hong Kong communities "modern" practices of food preparation. As such, discriminatory and racialized colonial practices masqueraded as public health policies wrapped in the objective veneer of Western science and medical knowledge.

Finally, the third section, "Moral Foods," builds on these themes of good versus bad in projects to make modern persons, subjects, and states by focusing specifically on the ambiguities and malleability of foods and the health regimes in which they are implicated. Moreover, the shifting nature of foods and the moral orders they articulate effectively illuminate

Asian societies' dynamic position within the larger global flows that have shaped the contemporary period. The malleability of moral foods provides unique opportunities for connections and disconnections between Asian societies and their counterparts elsewhere in the world.

Tea is an especially useful example for considering both changing ideas about health and nation and changing relationships between Asia and the rest of the world, as Lawrence Zhang shows in his chapter. Through a detailed assessment of the value of tea in Asia and in Europe, with particular attention on how tea changed from being understood as a toxic substance in the nineteenth century to a beverage popular for its mood-lifting qualities in the twentieth century, Zhang examines the transformation of tea and the Asian medicinal systems in which it was embedded into commodities and forms of knowledge for global circulation. Yet this movement was not unidirectional, as Western scientific and popular knowledge of tea, its physiological effects, and cultural value were retransmitted back to China, thus repositioning tea as both good and bad.

Angela Leung tackles questions of the shifting valences of food and health in her chapter on scientific vegetarianism in China. By detailing the ways in which vegetarianism was appropriated by both scientists and political activists in the twentieth century, Leung shows how vegetarianism shifted moral registers at different historical moments, thereby revealing how values of "good" coincided at different moments with other values, such as "revolutionary" or "patriotic." Through this, she provides insights into the political processes by which Chinese state making occurred, both in relationship and opposition to various political constituencies.

The impact of global flows on individual foodstuffs and the systems of health knowledge in which they were situated appears in the chapter on Chinese medicine by Volker Scheid. Scheid discusses key medical texts that were used by health experts in the nineteenth century and compares them with more contemporary texts by German dietetic experts. Through this comparison, Scheid documents how these nineteenth-century medical texts set contemporary standards for foods and medicines and their uses in health systems focused on nourishing life, as evident in popular traditional Chinese medicine dietetic texts from the past several decades.[43] At the same time, Scheid shows that these dietetic norms belong to older traditions from the Ming Yuan/Ming periods, or even the Song period, when this knowledge developed into a system. Thus the circulation of knowledge about food and health is both transhistorical and transnational.

Finally, the effects of transhistorical and transnational circulations of foods and health systems as part of local-foreign civic health campaigns come through persuasively in Hilary Smith's chapter on digestion as a site of nation building in China. Specifically, as Smith details, echoing themes raised by Nakayama and Fu earlier in this volume, milk drinking has been a particularly fraught food experience for Asian societies. On the one hand, because Asian populations often lack proteins for digesting lactase, milk drinking brings with it physical discomfort. On the other hand, consumption of cow's milk has been symbolic of Western cultural and political progress and thus has been prominent in aspirational consumer habits throughout the twentieth century, especially in China. Yet, as Smith shows, what emerges in Chinese milk drinking habits is a paradoxical situation in which milk drinking is positive, but the experience of milk drinking requires remaking Chinese bodies into defective bodies. Thus it is not just desire to consume a particular product but the desire to conquer a defective body that is at stake.

Collectively, through these varied discussions of good and bad foods, bodies, citizens, and states, the contributors to this volume raise a number of important questions not just about how foods and the bodies that consume them come to be valued politically, economically, culturally, and morally, but also about how the very processes by which modern states have developed have relied on those values. Consumers in modern Asia were not simply eating to satisfy personal desires or physiological needs but were conscripted into national and global state-making projects through those acts of ingestion. Eating, then, was about fortifying both the person and the nation.

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Part I

GOOD FOODS

1 | Health, Wealth, and Solidarity

Rice as Self in Japan and Malaysia

Francesca Bray

Japan and Malaysia both attribute high moral value to rice as national staple, generator of national wealth and solidarity, and definer of national identity. These are prosperous modern economies that have long outgrown their agrarian roots and can well afford to purchase staple cereals on international markets. Yet both nations have chosen, in the teeth of free-trade opposition, to invest vast sums of money in subsidizing their dwindling populations of small rice farmers in order to achieve self-sufficiency in rice. To justify their resistance to submitting homegrown rice to the normal regulations of commodity trading, the governments of both Japan and Malaysia claim that in their nation rice must be counted as a "cultural exception."[1]

Critics of the two nations' protectionist policies decry the wastefulness of paying smallholders to grow expensive rice when big farms would be more efficient, and when cheap rice is plentifully available on international markets. But are such policies simply self-indulgent folly? Or are they perhaps better understood as the expression of purely material prudence in a world in which trade circuits of staple foods have shown themselves vulnerable?[2] It is much more than prudence, I argue: the value of rice in Asian nations such as Japan and Malaysia, where a country and its citizens understand themselves as being constituted socially, physically, spiritually, or morally by their staple food ("rice as self"), cannot be reduced to dollars and cents, or even to full or empty supermarket shelves. Whether or not it is efficient purely as a system of production, the value attached to smallholder rice farming in Japan and Malaysia reflects both its key role in the recent past, helping both nations to build

wealthy modern economies, and its efficacy today as producer of the common staple that nourishes social solidarity, not simply feeding the nation materially but maintaining it in good moral health.

"Rice as Self"

Walking through a Japanese street market or browsing the fine-food stalls in a Japanese supermarket in the autumn months, one's eyes are drawn to the bags of new rice from famous rice regions prominently displayed among the seasonal specialties. Adorned with beautifully calligraphed labels, the fresh grains of Koshihikari, Hitomebore ("love at first sight"), or Akitakomachi varieties of rice are objects of connoisseur consumption. These seasonal treats command prices closer to French wine or Brazilian coffee than to a daily staple, and are a favored gift. At a more mundane level, whenever the Japanese government cedes to international pressure and opens the door a crack to rice imports, cheap street stalls play up to rice chauvinism by festooning themselves in banners proclaiming that all their dishes use "100 percent Japanese rice."

Japan's national love affair with rice is well known. Faced with the paradox of an advanced high-tech economy that insists upon protecting an expensive, noncompetitive rice-farming sector, comprised of millions of smallholder farmers, in the teeth of free-trade requirements and competition from international agribusiness, and seeking to account for the ingrained belief freely expressed by politicians, folklorists, historians, sports trainers, environmental scientists, and the public at large that Japan's identity and success are rooted in its rice-farming traditions, that its landscapes owe their beauty and sustainability to rice farming, and that Japanese-grown rice not only tastes better than all foreign rice but also possesses unique nutritive properties essential to the health and vigor of the Japanese body, anthropologist Emiko Ohnuki-Tierney proposed the idea of "rice as self" to explain how rice is incorporated into Japanese self-understanding.[3] The implications go far beyond personal health: the consumption of homegrown rice nourishes a moral compact between citizens and nation, an understanding of the shared material and cultural foundations of national health, wealth, and solidarity in the face of today's geopolitical challenges.

The concept of "rice as self" applies equally well to modern Malaysia, where rice has likewise played a prominent material and moral role in

forging the modern nation and the identity of its citizens.[4] Contemporary Malaysia's prosperity and economic success, indeed its very existence as an independent nation, derive from the labors of its rice farmers, portrayed as quintessential bearers of a national cultural tradition. As in postwar Japan, ever since Independence in 1957 the Malaysian government has heavily subsidized rice farmers in the name of national food security, economic development, and social justice, resisting international pressures to open up its markets to rice imports, and justifying this stand by claiming that in the Malaysian context rice constitutes a cultural exception to the normal regulation of commodity trading.

Although the Malaysians, unlike the Japanese, attribute no special qualities to homegrown rice varieties, they do, like the Japanese, consider rice a particularly nourishing food—physiologically, socially, and politically. Malaysia has a stormy history of interethnic conflict, and it is important that the three ethnic groups—Malay, Chinese, and Indian—share rice as the main staple and comfort food. Each ethnicity has its own cuisines, its own traditions of processing and cooking rice, but in urban Malaysia today we find a number of rice dishes, adapted to leave out any potentially offensive ingredients, that are particularly appreciated as foods that can be eaten in mixed groups. Rice dishes such as *nasi lemak* or Hainanese chicken-rice embody interethnic sociality and solidarity, nourishing a shared sense of Malaysian citizenship.

In both Japan and Malaysia, then, rice is a morally charged food. Although there are significant differences between the historical role and the technical and economic impact of rice farming in the two nations, and between the registers in which native-grown rice is valued, in both countries the production and consumption of rice serve as powerful expressions of national solidarity on the one hand, and as claims to sovereignty and challenges to a US-defined economic and political orthodoxy on the other.

Counterposing how food is used by citizens as a vehicle for moral expression in established market economies such as the United States and in socialist or postsocialist nations, recent food studies suggest that the contrasts

> invite new conversations about the nature of the state and its role in the everyday lives of citizens. Under state socialism, the deep penetration of the state in the most intimate spaces of citizen's daily lives (and bodies) meant that state and citizen were never fully distinguishable from one another. . . . Whereas

> citizens in advanced capitalist countries such as the United States understand spaces and activities like community gardens, organics, and Slow Food as deliberately distanced from the state and the market, socialist citizens have experienced them as belonging within a state-citizen intimacy that can jump scales from the personal to the national and from the personal to the political.[5]

But it is not the experiences of (post)socialist nations alone that should prompt social scientists or historians to question accepting the United States as a general norm and natural point of reference. The Slow Food movement began in Italy, where the relations between government and individual, state and society, are viewed very differently than they are in the United States; how the political values associated with the Slow Food movement travel across national borders is a question that deserves closer attention than it has generally been given.[6] In the case of nonsocialist Asian nations such as Japan or Malaysia, the degree of accepted intimacy between state and citizen more closely resembles that in former or current socialist nations than it does the stark opposition made between government and private, entrepreneurial individual, in the United States. Like the postsocialist nations of Eastern Europe struggling to meet supposedly neutral EU regulations based on a moral economy of plenty, when it comes to food policy, or to economic policy in general, nations around the world must manage the interplay and tensions between "several ethical orders operating at different scales,"[7] and many have reservations about ceding moral authority entirely to US- or EU-derived formulations of rights and obligations.

Despite many differences in their political history—Japan was once a colonial power in its own right, for instance, while Malaysia emerged as an independent nation after many decades of British colonial rule—the postwar nation-building strategies of both countries, like those of most of their Asian neighbors, followed the model known as the "developmental state."[8] Both nations' governments, leaders, and political philosophers have, furthermore, proposed and indeed pursued alternative visions intended to distance them from many conventional Western political tenets.[9] Their rice policies are one politically resonant and effective tool for mobilizing public support for claims of moral independence from the neoliberal strictures of the Washington Consensus and supposedly atomistic, individualist "Western values."[10]

Japan's Ideology of Rice

Japan is the classic case of "rice as self," a country where self-identification as rice producers and rice consumers has a particularly venerable and richly elaborated history. The supposedly unique qualities of Japanese rice as food and crop have been woven into essentialist "theories of Japaneseness" (*nihonjinron*), which assert variously that rice has been the staple food of all Japanese since time immemorial, that the nation's cities would disappear under floodwater if not protected by irrigated rice fields upstream, that the skills of rice farming molded the Japanese path to capitalism, or that Japanese athletes can reach their full physical and psychological potential only if they eat homegrown rice.[11]

While the Japanese concept of "rice as self" has roots that are indeed ancient, over the last 150 years it has been radically retooled for modern needs. Today's *nihonjinron* and discourses of Japanese rice essentialism claim an immemorial heritage stretching back to Amaterasu, the Sun Goddess, who built and tended the sacred rice fields that fed the first Japanese. In temples or tiny wayside shrines, in villages or city centers, the shrines to Inari, the fox deity who protects the rice crop, are still kept freshly supplied with offerings of rice. The sandals and ropes for festival processions must be plaited from rice straw, and a bowl of rice is offered daily in every house that still maintains a family altar. As the direct descendant of the Sun Goddess, each spring the emperor plows a small plot of rice land on behalf of his nation, and every autumn he harvests some symbolic sheaves. This is not, however, an immemorial ritual. The ceremony was formalized during the Meiji period (1868–1912) as a potent tool in the government's agenda of building a modern imperial nation, powered by solid agrarian values, in which productive rice farming would provide the capital and labor for rapid industrialization and militarization.

Japanese rice identity, in theory and in practice, was a long-evolving construct.[12] In Japan's earliest texts, dating back to the seventh or eighth century, rice figured as the grain used for rituals and ceremonials, a sacred and prestigious food for the gods and the nobility. Peasants grew the rice, but ate coarse grains themselves. In addition to its ritual and status functions, rice in medieval Japan also served as tax, rent, and currency, a form of capital. From the early Tokugawa era (1600–1868), pressure from rulers to produce more tax rice, together with expanding urban markets for

food, led to signal improvements in rice-farming methods, productivity, and output, sustaining the rapid growth of commerce and urbanization.[13] Penelope Francks argues that this growing dependence upon rice profoundly shaped Japan's path to modernization. A rice-associated consumer culture grew up, shaping patterns of manufacturing development. As white steamed rice, with accompanying dishes and relishes, became the standard meal of urban Japanese during the Tokugawa era, not only did the number of rice mills and rice shops burgeon but a host of associated industries also flourished, including ceramics and lacquer manufacturers making dishes and chopsticks, and the soy sauce, brewing, and pickle industries producing relishes to go with rice.[14]

Rice continued as the engine of development in Japan throughout its modernization. The Meiji government (1868–1912) invested heavily in developing national rice production as the essential resource base and source of capital for rapid Western-style industrialization and militarization. Modern inputs such as mechanical pumps and chemical fertilizers raised yields in Japan, while the annexation of Taiwan (1895) and Korea (1910) as Japanese colonies further increased national rice acreage and output. While rice had long been the typical urban fare, the rural poor still typically ate more bean-and-barley porridge than rice. But by the 1890s military and industrial canteens could provide their soldiers and workers with daily rice and pickles—this, many felt, was really going up in the world! By the turn of the twentieth century rice had become the staple that the whole Japanese population expected to eat at least twice daily. Rather than a marker of elite status, it now formed a bond between rich and poor, nourishing national solidarity.[15]

New expressions of rice identity, in recipe books and schoolbooks, folklore studies, nutritional research, domestic science, and imperial ritual, flourished as a consequence. The Meiji government formulated an ideology of "agrarian fundamentalism," *nōhon shugi,* identifying traditional small-scale rice farming and the associated communal values of cooperation and discipline as a key source of national identity and civic virtue.[16] But the accelerating demands of national development and increasingly harsh levels of extraction placed a heavy strain on rice farmers. Landlordism increased, and rural living conditions deteriorated, plummeting still further after the Great Crash of 1929. By the 1930s many small farmers were destitute, and the war effort brought the countryside to ruin and starvation.

So far from being discredited, however, under the US Occupation in 1945 the "fundamentalist" agrarian idyll of myriad tiny rice farms supporting national growth was revived. Now, however, landlordism was eradicated under an American-guided land-reform policy of "land to the tiller": fields were distributed among former tenants, and selling and renting of farmland became subject to very strict control. The American intention was to cut off support for Japan's militaristic elite, eliminate any threats of communism, and foster grassroots democracy. By the 1960s the economy was sufficiently recovered for the Liberal Democratic Party (LDP) to dispense generous subsidies to the millions of small rice farmers who became, and have remained, its most faithful supporters. It is largely thanks to the rural vote that the LDP has remained in power almost continuously since 1955.

Postwar farm support policies and subsidies initially benefited all Japanese society. Farmers were provided with capital to modernize their methods and increase their output and incomes, and their purchases of farm machinery, domestic appliances, and consumer goods supported the expansion of an internal market for Japan's manufacturing and service industries.[17] Independent smallholder farming, combined with employment in village-based industries, became established as the basis of a solid rural economy, and farm household incomes began to equal those of urban families, discouraging the rural exodus typical of most other postwar nations.

Thanks to heavy investment and strict discipline, agriculture recovered rapidly after the war. Japan was self-sufficient in rice by the mid-1960s. But with national development came problems. People began to eat less rice as their incomes increased, although rice output continued to rise with the successful application of new technologies. In 1971 the government introduced generous set-aside payments (*gentan*) in an effort to reduce rice surpluses to manageable proportions. Although mechanization reduced the time needed to grow rice, opening the way in principle for larger, more cost-effective farms, rice land is considered a particularly precious heritage, sales are difficult, and there is little scope (or appetite) for consolidating holdings. In the long term the Japanese government has underwritten a perpetuation of peasant agriculture, albeit with a prosperous, middle-class peasantry. Today there are over two million small farms in Japan, of which at least one and a half million produce rice; the average rice farm is under half a hectare in size. The tiny rice holdings are by no

means "traditional": they are highly capitalized and technically advanced, making the labor quite light. Typically the older household members tend the farm while the others work in nearby towns. Japan is probably unique in the world today in that—thanks to agricultural subsidies and ample opportunities for off-farm employment—the average income of its farming households has for decades been consistently higher than that of urban families. Rice production has essentially become a costly, overequipped sideline, sometimes described as a hobby for pensioners.[18]

Today it costs twice as much to grow a kilo of rice in Japan as it would to import it from Australia.[19] Ever since the 1980s Japanese agricultural methods and policies have been widely criticized for their inefficiency, and for their unfairness to foreign rice producers in a world of free-market competition. There is no doubt that by standard economic and environmental criteria the production of Japanese rice is extremely inefficient. In political and cultural terms, however, the smallholder technology of Japanese rice farming has been extremely efficient.

The rice farmers and their families, the LDP, and the manufacturing and service sectors have all benefited directly from the government's investments in rice production over the last seven decades. The benefits to the public at large are less obvious to outside eyes but are nevertheless sufficiently appreciated within Japan for the rice-protection lobby to be able to mobilize considerable popular support. National food security remains a sensitive issue, and threats to the rice supply trigger "national panic"[20]: the terrible shortages and starvation of the war years are still not forgotten, and fears of the effect of climate change on world food supplies were heightened by a severe global food crisis in 2007–2008. Furthermore, the rice that the Japanese like to eat is the slightly sticky, round-grained Japonica. Most rices available on world markets are long-grained Indica varieties unsuitable for Japanese cuisine. For all these reasons the Japanese public is willing to pay the price for subsidizing homegrown rice, particularly as the high cost of ordinary rice represents a very small part of today's household budgets (thus, as mentioned earlier, there is ample demand for luxury rices too).

With the average Japanese rice farmer now in his or her seventies, it seems that the postwar rice regime is finally on the brink. Yet recent proposals by prime minister Yoshio Abe to cut financial support to rice farmers and open the doors to rice imports are not so much a response to pressures within Japan or to budgetary shortages.[21] Rather, they are

diplomatic concessions to the free-trade demands of such regional and international consortia as TPP (Trans-Pacific Trade Agreement). Even the TPP negotiators, however, have agreed that rice has "special status" in Japan and should therefore be treated as an exception in free-trade negotiations.[22]

In sum, when a modern Japanese family sit round the supper table eating their bowls of Japanese-grown rice, they are not simply indulging a gastronomic preference for short-grained and slightly sticky Japonica rice over long-grained Indica rice from Thailand. They are eating and absorbing a food redolent of national essence, of tradition—in the sense of an invented and reinvented past—and of moral commitment. The enduring idyll of peasant rice farming in Japan, the deep attachment of politicians and hydrologists as well as the general public to the rice-farming landscape, and the multilayered expressions and experiences of rice-as-self are the outcome of a highly successful political strategy of traditionalizing, of building modern national solidarity around a staple that everyone acknowledges as the food that makes Japan Japanese.

The representation of Japan as a nation tied to its legendary roots and maintained in good physical and moral health by the labors of simple, thrifty, and patriotic rice farmers is one that has served Japanese nationalist causes successfully for well over a century. It retains its popular appeal: there is still a wide sense of obligation among the Japanese public to rice farmers who sacrificed so much to build Japan into one of the world's richest and most advanced nations. This gratitude is made publicly visible twice yearly, when the emperor is shown on television plowing a spring furrow on the palace rice farm or offering newly harvested grain to the gods in autumn. The assurance that Japan can supply itself with homegrown rice, and that it is sufficiently powerful to resist US-driven demands that it throw open its rice markets and sacrifice its rice farmers on the altar of neoliberalism, are also considerable sources of national pride.

How Malaysia Became a Rice-Farming Nation

The similarities between the current situations in Malaysia and Japan are at first glance so striking that we might suppose that rice played an identical role in both nations in shaping history, economy, policy, and national identity. In Malaysia, as in Japan, the postwar government has invested

lavishly over decades in developing national rice production, preserving small-scale farms as the core of the rice industry despite economists' critiques.[23] In both Malaysia and Japan, the current cost of growing a ton of rice at home is double the price of importing it. Malaysia, like Japan, has been severely criticized abroad for the inefficiencies of its rice sector and the unfairness of its subsidies, yet has succeeded in having its homegrown rice classified as a crop of high cultural significance, excluded on those grounds from the free-trade agreements that regulate normal commodities. In stark contrast to the Japanese case, however, Malaysia's small rice farmers have remained poor. Forty years after first adopting the technologies of the Green Revolution, they still represent troubling "pockets of poverty" in a prosperous, middle-income society.[24]

In fact the paths by which Malaysia came to adopt its profarmer policies, as well as the economic status of rice farmers and the moral meanings of rice as food in Malaysia, differ significantly from those of Japan. The complicating factor in Malaysia has been race. The commitment of the post-Independence Malaysian state to maintaining a rice-growing peasantry has to be understood in the context of Malaysia's complex and tense history of ethnic distinctions and strife, and of the determination of the post-Independence government to build a durable basis for "national unity."

I spent 1976–1977 studying the introduction of Green Revolution technologies in Bunut Susu, a rice-farming village in the East Coast state of Kelantan. By then Malaysia was justifiably confident of a bright future as an economically successful nation, and it could well afford to invest large sums in a Green Revolution. Rice development packages were carefully matched to the perceived needs of peasant farmers, rather than favoring larger farmers, as was the case in Green Revolution programs in regions such as the Punjab. Nevertheless, it seemed that a radical transformation of rural society was looming, in line with broader transformations through the Malaysian economy.[25] An enviable growth rate of 5.9 percent per annum showed no signs of flagging. The expansion of the Malaysian economy was prudently balanced across a wide range of activities, comprising urban-based sectors such as the electronics assembly industry, construction, and a new and ambitious finance sector, as well as natural resource extraction (including tin mining, timber, and the oil and gas industry) and export plantations of rubber and oil palm, which likewise added

considerably to local employment and to the national coffers. By 1976 Malaysia had indisputably entered the club of modern nations.

The previous years, however, had not gone so smoothly: ethnic and geopolitical tensions threatened the new nation's survival for over a decade. At the time of Independence in 1957 Malays numbered about 55 percent of the population, Chinese 35 percent, and Indians 10 percent. Occupational segregation was marked. Most businesses, large and small, were owned by Chinese, but almost all land and senior government and military positions were in Malay hands. Poverty was widespread among urban working-class Chinese and rural Malay farmers alike, yet tensions between the two ethnic communities over political control and perceived inequalities in wealth and opportunity ran high, and events kept fanning the flames.

The first prime minister of independent Malaya, Tungku Abdul Rahman, coined the term *bumiputra,* "sons of the soil," to distinguish ethnic Malays and other indigenous groups from "recent immigrants," that is to say, Chinese and Indians. With the *First Malaysia Plan* (1966–1970) the government began a program of affirmative action to improve the economic position of the *bumiputra*—in effect, Malays. Though much resented by non-Malays, most Malays thought the program ineffectual. In 1963 Malaya expanded to become Malaysia, incorporating the sparsely populated but resource-rich Borneo territories of Sabah and Sarawak, and the densely-populated island-city of Singapore. Malay fears of the political impact of largely Chinese Singapore joining the nation led to race riots in 1964 and to the expulsion (some say secession) of Singapore in 1965. In the elections of May 1969 the opposition polled more votes than the Malay-majority coalition. This led to further traumatic race riots and the declaration of a state of emergency. A new Malay-majority coalition government under Tun Abdul Razak devised a detailed national framework, the New Economic Policy (NEP), to promote national unity.[26] "The NEP had two prongs, namely 'poverty eradication regardless of race' and 'restructuring society to eliminate the identification of race with economic function.' The NEP was supposed to create the conditions for national unity by reducing interethnic resentment due to socioeconomic disparities."[27] Among the primary targets of the NEP were rice farmers. Over 90 percent of rice farmers were Malay, of whom 88 percent were classified as poor, compared to 50 percent of the general population.[28]

Since Independence in 1957 the rice-farming sector had been a key focus of government policy and investment. Initially the goal was food self-sufficiency, a response to prevailing geopolitical tensions (see below). But in formalizing the identification of rice farmers as Malays, the NEP policy introduced in 1970 helped institutionalize the ethnic divisions that its "National Unity" policies were ostensibly intended to dissolve.

The glorious mission of feeding the nation is not a burden that Malay rice farmers had always had to shoulder, although de facto it was always Malays and other indigenous peoples who were the typical rice growers.[29] In colonial Malaya most wealth was generated by the tin-mining industry and by agricultural plantations growing coir, rubber, tobacco, and other export crops. The mines were originally financed and owned by Chinese companies and worked by immigrants from China's southern provinces; from the 1850s, as one Malay kingdom after another accepted British protection, the mines were bought up or displaced by British companies, but the labor force remained Chinese. The agricultural plantations began later; they were largely owned by British companies and run with immigrant labor from India.[30] Although some Malay immigrants from Indonesia were sailors or merchants by profession, most small trade and business in Malaya was in the hands of Chinese or Indians. Most ordinary, "native" Malays disdained the idea of working for foreigners in mines or on plantations. They chose to live in small villages (*kampung*) scattered through the countryside, growing rice and supplementing their incomes with crafts or smallholding production of cash crops.[31] The rice they grew barely sufficed to feed themselves and their local Malay rulers; very little entered the market. The towns, barracks, mines, and plantations of colonial Malaya therefore depended upon rice imports.

Under British rule food self-sufficiency was debated but dismissed: it was cheaper and easier to import Burmese rice to feed the mining and plantation workers who powered the economy. Ways to increase local rice production were often discussed, but Malay rulers and British administrators alike doubted that rural Malays would willingly sacrifice time and income to grow more rice. Schemes to modernize production with irrigation and mechanization were too costly to develop far, and attempts to coax Chinese entrepreneurs into setting up as commercial rice farmers failed. Overall it made sense for British Malaya to import the bulk of its rice supplies from elsewhere in the empire, mainly Burma or Bengal.[32]

Rice farming in the Malay States under the British remained essentially a subsistence activity, contributing little to the national economy or to urban food supplies. Yet it was the foundation for the livelihood of millions of rural Malays, and steps were taken to support and protect a social group viewed as both vulnerable and entitled. In 1913 the Malay Reservation Enactment came into force: designed to protect Malays against dispossession by (mostly Chinese) moneylenders, it prohibited the transfer to non-Malays of Malay Reserve Land, which included most farmland. Meanwhile the Rice Lands Enactment of 1917 prohibited, in principle if not always in practice, any alienation to other crops or uses of land suitable for rice farming.[33] Rice farming and Malay identity thus became inseparably entwined.

By Independence in 1957 the calculus of how best to secure the national food supply had changed. Prospects for reliable rice imports looked grim. Burma was no longer a sister state within the British Empire; indeed, after the 1962 coup it disappeared from the map of international trade. The years 1962–1966 saw an undeclared war (Konfrontasi) with Indonesia, which objected to the Borneo territories of Sabah and Sarawak joining Malaysia. Indochina was plunged in war, and Asian as well as Western leaders feared that Thailand and Indonesia would soon succumb to the communist menace. It was clear that the new Malaysian nation must try to feed itself. The government declared a goal of 100 percent self-sufficiency in rice, and went all-out for a program to boost production through irrigation, extension of the rice area and investment in fertilizers. A guaranteed minimum price (GMP) policy had already been introduced in 1949, but the GMP was raised to encourage farmers to put more rice on the market.[34] In 1960 the nation produced 54 percent of its rice needs; by 1970 this had risen to 80 percent. Total output, cultivated area, and average yield all increased by about half during this decade, yet rural poverty actually increased, although 40 percent of all the considerable sums invested in national development were spent on agriculture.[35]

At Independence rice farming was already identified in the national mind as a quintessentially Malay occupation. Early national surveys showed that over 90 percent of the rice farmers in the Peninsular states were Malay (a figure that still holds today).[36] Furthermore, "with independence and democracy came the realization that the rice-growing peasantry represented a substantial power bloc for whom it was both politically and economically desirable to do something."[37] At that point two-thirds of

votes were generated in the rural sector, and rice farmers were one-fifth of the national labor force.[38] Reminiscent of the Japanese LDP's moves to secure the support of rice farmers after the war, the ruling party's New Economic Policy, initiated in 1970, marked a significant shift in state policy, from increasing rice production to increasing the income of rice farmers.[39] The NEP aimed to eradicate poverty and to promote national unity and strength. How better to do this than by raising the incomes of impoverished Malay rice farmers, supporting and feeding them in return for the onerous responsibility of growing rice to feed the nation?

Reciprocity, or mutual assistance, is famously a key organizing principle, ethical and practical, of "traditional" Malay *kampung* life. The idea that many hands make light work, or that a trouble shared is a trouble halved, is encapsulated in the term *gotong-royong,* "mutual assistance," frequently invoked by national and local government in Malaysia as a principle for promoting collective projects for the public good and, in the process, promoting social solidarity—especially across ethnic groups. It was the Indonesian government, immediately after Independence in 1947, that first mobilized *gotong-royong* as both a social ideal and a concrete practice for building social solidarity and for bridging contending ethnic or class interests in an ethnically heterogeneous and culturally fissile nation.[40] Faced with similar challenges of muting racial antagonisms, the Malaysian and Singaporean states quickly seized upon *gotong-royong* or "*kampung* spirit" as a morally powerful organizing tactic redolent of an innocent and caring village tradition.

In actual *kampung* practice, the most spectacular form of mutual assistance was *usung rumah,* "lifting the house."[41] But mutual assistance also figured prominently in everyday arrangements for the production, circulation, and consumption of rice. In her study of Malay housekeeping, conducted in a fishing village on the Kelantan coast during 1939–1940 and 1963, Rosemary Firth notes that the value set on rice far surpassed its importance as the indispensable daily staple: exchanges of rice circulated like blood through the body, not only between close kin but also between neighbors and more distant relatives, nourishing and fortifying as they flowed.[42] In her study of food, substance, and the processual nature of kinship in Langkawi, an island off the West Coast of Malaysia, Janet Carsten shows that for village Malays, feeding (understood as both the giving and taking of food or nourishment) was a "vital component in the long process of becoming a person and participating fully in social

relations." "Food," Carsten continues, "creates both persons in a physical sense and the substance, blood, by which they are related." Children are nourished in the womb by their mother's blood, and after birth by the milk from her breast, formed from her blood. Blood is created in the body from food, and the primary food, the substance of any real meal, is cooked rice, *nasi*.[43] "*Darah, daging mari pada nasi,* 'Blood, flesh come from cooked rice,' people say," and the sharing of meals of rice builds relatedness between all those living around one hearth, just as drinking milk from the same woman's breast makes infants, whether her own offspring or adopted, into siblings.[44]

In Bunut Susu, the *kampung* where I conducted my own fieldwork in the late 1970s, during the first years of the Green Revolution rice still pulsed through village life, nourishing social bonds and a sense of community. Sometimes the rice was cooked (*nasi*), equally often it was still in the husk (*padi*), or milled but raw (*beras*). Guests at weddings or circumcisions brought *beras* for their hosts to cook and serve as *nasi* at the communal feast. Friends who helped with tasks such as rebuilding a house were given *beras* or fed *nasi;* giving cash would have denied the closeness and permanence of the relationship. Transplanting and harvesting, when extra hands were needed, involved two forms of exchange: *berderau,* where groups of families exchanged equal quantities of work on each other's fields, and *pinjaman,* where the farmer provided a midday meal of *nasi* and curry to kin or neighbors who turned out to help. Although most seasonal labor needs were met through exchange, there were also opportunities for the landless, who could turn up to help at harvest and were paid one bundle of *padi* for every twenty they reaped.

One could think of these *kampung* transfers of rice as at once a form of currency for payment, a celebration of people working together, and a nourishing of long-term relations, a mutual feeding that built solidarities and redistributed resources. The redistributive element was especially clear in the arrangements for access to rice land. Rice tenancies were all sharecropping agreements: the rent was transferred at harvest time, dividing up the bundles of rice between landlord and tenant in a ratio agreed upon at the beginning of the contract. It might seem that the scarcity of rice land would always advantage owners, but because it was rented only between households within the village and the terms were common knowledge, generosity largely prevailed. Frail elders got a bigger share from their tenants, couples with small children were charged less rent.

Sharecropping redistributed the scarce resources of land and labor and shared the risks and benefits of unpredictable yields.[45] The ethos was so marked that some researchers spoke of "income sharing" as the basic principle of economic life in the *kampung.*[46]

Rice, then, knit the *kampung* community together, not least because no household could manage transplanting and harvesting without help. Through food sharing, labor exchange, and sharecropping contracts, land, labor, and raw or cooked rice were exchanged in ways that helped all families to eat, work, and survive. Translated into the symbolic logic of the *kampung,* if all Malaysian citizens, whatever their ethnicity, partook of the *nasi* provided by *bumiputra* farmers, this sharing of nourishment, and the exchange of resources that its production entails, would build visceral solidarities between individuals and groups whose interests and identities would naturally differ, diverge, or even conflict.

Under the New Economic Policy (NEP) these rice reciprocities were enacted on a national scale. In the name of social solidarity, national unity, and producing *nasi* to feed the nation, rice farmers contributed their land and labor, and the state (on behalf of the nation) contributed massive investment in infrastructure, credit, subsidies, and technical know-how, in an exchange intended to assure not simply the well-being but also the very survival, as modernization progressed, of an economically marginal yet symbolically potent group. The poor Malay rice farmers, voters all, were constituted as the quintessential subjects of the NEP *bumiputra* policy of redistributing wealth and capital assets to Malays from the wealthy, largely non-Malay, business and industrial sectors. This transfer was to be effected by the government, in the name of securing supplies of the food that all Malaysians, Indians, Chinese, and Malays alike shared as their staple. Although for complex structural reasons the Malaysian state never succeeded in enriching its rice farmers, the policy of subsidizing their incomes has remained in place, unchallenged, ever since, and in trade negotiations Malaysia-grown rice continues to be treated as a nonnegotiable noncommodity, a national good.[47]

Rice in National (or Nationalist) Cuisine

From the role of rice farming in Japanese and Malaysian nation-building, let us turn to rice eating and the place of rice in building a national cuisine.

Japan's modern rice-oriented cuisine has, as mentioned, been long in the making. Its trajectory resembles that of France, say, or Spain,[48]

reflecting a long process of national integration of a population that was ethnically and religiously relatively homogeneous, while having strikingly different regional culinary styles and marked differences between rural and urban, and upper- and lower-class diets. Similarly to France, factors that played a key role in shaping "normal" food preferences and culinary practices over the centuries in Japan included urbanization, industrialization, the growth of a middle class, the establishment of a modern army, state investment in agricultural improvement, and new scientific and educational patterns, including the programs in home economics designed to teach Japanese women scientific principles, modern techniques, and appropriate kitchen design for feeding their family a healthy diet.[49]

In the early Tokugawa period (1600–1868), the predominantly peasant population typically ate their meals from a single pot, hung over the fire, into which various cereals, pulses, vegetables, and perhaps a little meat were thrown. Rice was sometimes one ingredient in these fuel-efficient stews, but naturally its distinctive qualities did not stand out. A single-pot cuisine persisted in rural Japan, despite the efforts of social reformers, until the post-World War II surge in prosperity allowed farmers to purchase modern kitchen equipment, including the newly invented electric rice cooker.[50]

A contrasting middle-class food style began to emerge in the 1600s. A growing urban population of merchants and craftsmen, who purchased their foodstuffs in shops, began to share the samurai-class taste for white rice accompanied by side dishes. Although poorer families could often only afford rice mixed with beans or barley, pure white steamed rice with side dishes was established as proper food. Rice was a "favored grain," regarded as a "civilizing good" with "connotations of status and sophistication." Eating steamed polished rice from a ceramic bowl with lacquer chopsticks became a way to demonstrate one's social polish.[51]

By the 1880s a diet based on white rice was standard in Japan's cities, a staple even for the working poor. An 1898 survey showed households of rickshaw pullers spending over 80 percent of their food outlay on rice. Eating mixed rice was now cause for embarrassment or shame. But it was Japanese rice, not just any rice, that was considered "ordinary food."[52] In 1918 rice riots broke out across the country: shortages of homegrown rice had prompted the government to use imported Indica rice as food aid for the poor, but they indignantly refused such insulting treatment.[53]

Since the 1960s the standard domestic meal for all Japanese citizens, urban or rural, wealthy or poor, has consisted of unmixed white Japonica

rice with side dishes. Rice-flour cakes and noodles, as well as rice wine, or sake, are other forms in which rice is regularly consumed. White rice is an essential component of *kaiseki* haute cuisine (a sophisticated elaboration of the rice-with-side-dishes formula), and learning to prepare the special rice for *sushi* notoriously takes years of apprenticeship. Although a case can be made for wheat noodles, ramen, as the most popular fast-food dish in Japan today,[54] and many Japanese now eat wheat toast at breakfast, white rice with an egg beaten in (*tamago kake gohan*) or mixed with green tea and relishes (*ochazuke*) are the typical Japanese comfort foods; stuffed rice-balls (*onigiri*) are a favorite snack on the move; and the dish of white rice (*gohan*) retains its aura as real food, the food that satisfies, the dish without which one has not really eaten.

The primacy of rice in today's Japanese cuisine is the outcome of a long process of national integration, eroding barriers of class and the urban-rural divide. In the case of Malaysia, the main challenge to national integration is ethnic division. Despite the best efforts of the National Unity Board, set up after the race riots of 1969, top-down policies to smooth over tensions have not been effective. After six uninterrupted decades of one-party rule, the situation currently seems to be worsening rather than improving. A 2015 survey indicates that increasing numbers of Malaysian citizens (especially non-Malays) deny that ethnic harmony has been or can be achieved.[55]

Government concern is reflected in a torrent of publications and initiatives. Interestingly, the creation and promotion of "Malaysian national dishes" now features on the cultural program for "Unity = Diversity + Inclusiveness," along with such long-established staples as communal dancing and singing, civics classes, and *gotong-royong* projects. Ministers, administrators, and researchers are joining forces to brand a national cuisine that would promote multicultural harmony within the nation, and (since "Malaysian cuisine" remains a fuzzy concept on the global culinary scene, compared to its Thai or Indonesian rivals) "demonstrate our nation's cultures and food identity to attract international tourists."[56] But what dishes would be "commonly acceptable"[57] in Malaysia's multicultural society? Here, it turns out, Malaysian citizens have already done an excellent job all on their own.

The challenges of intercommunal eating in Malaysia resemble those noted by Arjun Appadurai in his study of the development of a modern Indian cuisine. In colonial India, caste, religion, and regional taste all

prevented food sharing across social groups. Post-Independence, with the rapid growth of a new, mobile middle class of civil servants, professionals, and business people, new needs and desires for sociable eating arose. In India and elsewhere in postcolonial Asia, adapted, modernized, and deterritorialized "traditional" dishes and cooking styles breached the barriers of food cultures that had previously been exclusionary. Sharing meals between regional, ethnic, or religious backgrounds now became both possible and pleasurable.[58]

What were the initial barriers to sharing food in Malaysia? As Muslims, Malays do not eat pork; many Indians are vegetarians; and Chinese eat with chopsticks, while Malays and Indians eat with their fingers. Fortunately, although their food styles and prohibitions differ, all of Malaysia's ethnic groups consider rice a staple. The majority of "commonly acceptable" favorites are rice-based dishes, easily adapted for cross-cultural consumption because they remain substantial, retaining their identity, whichever other individual ingredients may be omitted or tweaked.[59]

A dish frequently claimed as *the* Malaysian national dish is *nasi lemak,* a Malay snack of sticky rice mixed with coconut milk, stuffed with peanuts and other relishes, wrapped in a pandanus leaf and steamed. This is a perfect dish for shared breakfasts, coffee breaks, or picnics, containing nothing that an Indian vegetarian would refuse, and closely resembling a popular Chinese sticky-rice snack, *zongzi.*[60] Another universal favorite is Hainanese chicken-rice, a dish originating from one of China's Muslim communities and so containing no pork; in Malaysia the steamed rice and chicken are eaten not out of bowls with chopsticks but on flat plates with spoon and fork, accompanied by lashings of chili relish. *Char kway teow* (fried rice noodles with prawns) and *laksa* (rice noodles in hot-sour soup) are other tweaked Chinese-multicultural favorites. Banana-leaf rice, a heap of rice served with an array of curries and relishes, is a popular "authentic" South Indian dish among urban food-stall or restaurant clients, with *nasi kandar* the Muslim Indian equivalent.

Unlike in Japan, in Malaysian understanding it is not the intrinsic properties of homegrown rice that create solidarity; rather, it is through production, preparation, and consumption practices that rice's moral qualities as a bridge builder are brought into being. Rice-based dishes are particularly easy to adapt as interethnically acceptable yet ethnically distinctive; eating them promotes an enjoyable sense of shared citizenship.[61] The government is now encouraging formal research on what

makes for a "commonly acceptable" and recognizably "Malaysian" dish with a view to "building the national food identity" and promoting multicultural harmony. It is to be hoped that the heavy hand of state endorsement will not stifle popular loyalty to a hybrid cuisine whose enjoyment has hitherto sprung from its informality and spontaneity.

The Poison in the Diet?

In Japan and Malaysia rice is perceived primarily as a wholesome, physically and morally nutritious food both for individuals and for society. But, as David Arnold underlines, when it comes to moral judgments, or even nutritional science, one man's meat is often another man's poison. Polished white rice in a rich and varied diet (like that of most Japanese and Malaysians today) is a healthy food; as the largely unsupplemented staple in the diet of impoverished plantation or mine workers (as in colonial Malaya) or army conscripts (as in early twentieth-century Japan), it caused beriberi; peasants subsisting on a similarly basic rice diet, including poor Malay peasants before the Green Revolution, however undernourished, did not suffer from beriberi because their home-husked rice still retained some bran.[62]

In terms of moral judgment, Arnold notes that in colonial India, mainstream British medical discourse identified a physiological-moral distinction between wheat and meat eaters (supposedly martial, energetic, and intelligent) and vegetarian rice eaters (indolent, weak, and effeminate). This colonialist ethnobiology of rice as a debilitating food contrasts starkly with the Malay belief that rice feeds the blood and makes the social person, or with Japanese understandings of rice's special nutritive qualities, such as Mishima Michiyoshi's belief that rice helped stimulate breast-milk production.[63]

Moving from the individual body to the national level, we could argue that Japan's and Malaysia's commitment to a diet of locally grown rice has had both healthy and toxic results. Whether or not we accept the Washington consensus about its economic extravagance and irrationality, small-scale input-intensive rice farming in Japan has undoubtedly proven polluting and wasteful of energy. But Japanese rice farmers as a group have thrived on the nation's rice diet, the public still loyally supports rice-farming subsidies (increasingly affordable in terms of the national exchequer), and

even if the numbers of young people staying on the farm have dwindled, public enthusiasm for homegrown rice continues unabated. In Malaysia, by contrast, although the public raises no objection to state policies of support for rice farmers (which now cost very little as a percentage of the GDP), Malaysian rice farmers remain poor and isolated, a politically iconic but economically marginal group whose embarrassing poverty the state struggles in vain to remedy—a canker, we might say, in the body politic.

Body Politics

In comparing the manifestations of "rice as self" in Japan and in Malaysia, many common features are striking. Yet if we trace the historical trajectories by which each nation came to its current expressions and discourses of "rice as self," if we examine the interweaving of modes of production, consumption, and representation in the history and politics of food and farming in the two nations, we perceive that superficial similarities mask some profound differences. It follows that there are no simple equations to be made between rice eating or rice growing and identity: the interest of each claim that "rice is us" or "rice is them" lies in its historical specificity, inseparable in every instance from the broad global economic, political, scientific, and economic context, the historical moment to which it responds.

As Francks remarks, if rice today is still the symbol of an authentic Japanese life, this reflects how tightly rice farming has been integrated into Japan's industrial formation, economic institutions, organizational styles, and consumer practices.[64] This is not true of Malaysia, although it, like Japan, has chosen to defend its peasant rice farmers against all odds, or—some would say—against all reason. The arguments for "rice as self" in Malaysia and Japan are similar but distinctive. In both cases rice is bound up with national, personal, and ethnic identity, and with a moral compact between state and citizens to support rice farmers as feeders of the nation. Yet while there are clear parallels between Japanese claims about rice as the maker of Japanese bodies and persons, and Malay *kampung* understandings of rice as corporeal, social, and moral substance, in the Japanese case such claims affirm an unquestioned ethnic unity. In post-Independence Malaysia, with its simmering ethnic tensions, no such intrinsic unity could be assumed. The national policy of developing,

protecting, and supporting peasant rice farms was not simply a pragmatic move to protect marginal Malays while securing supplies of basic food—at a more ambitious level it was a project of biological nation building. In gaining long-term public commitment to the costly enterprise, we may say that in this respect at least the Malaysian government has been successful.

"Ethnic" or "national cuisine" is typically as much a response to outside expectations or pressures as it is a natural expression of indigenous habits and resources.[65] The distinctive culinary features of our "national" dishes nourish group solidarity, differentiate us from neighbors or rivals (haggis, anyone?), and brand us in the eyes of the world, whether it be UNESCO, our trade partners, or tourists in search of authenticity.

Returning to food policy as moral position, Japan and Malaysia's opposition to the free-trade regulatory regime that would require them to treat rice, the national staple, as a simple commodity is a particularly eloquent and effective way to assert their nations' moral independence from the prevailing "Western" neoliberal consensus. Their claims for rice as a cultural exception, a national good set apart from the logic of commodity trading, reflect assumptions about the relationship between the personal body and the body politic, about the spheres of moral action appropriate to state and individual, which deserve further exploration and analysis. If food studies have hitherto looked most closely at the (post)socialist nations for alternatives to US-derived norms of governmentality and agency, these two distinctive cases of "rice as self" show clearly that there is ample scope to look further.

Notes

Thanks to Chris Hann, director of the Max Planck Institute, for permission to publish this revised version of Bray (2014).

1. France first introduced the concept of "cultural exception" during the 1993 GATT (General Agreement on Tariffs and Trade) negotiations. Claims were soon extended from cultural goods and services to foods (Broude 2005).

2. Most lately the "global food crisis" of 2007–2008 prompted extensive debate on free markets versus national food-security policies; see, e.g., Rosin, Stock, and Campbell (2013).

3. Ohnuki-Tierney 1993; Tweeten et al. 1993

4. On Korea, see also the chapter by Kim in this volume; on Vietnam, see Avieli (2012).

5. Jung, Klein, and Caldwell 2014, 12.

6. Krige 2019.
7. Mincyte 2014, 38.
8. G. White 1988.
9. Japan's *nihonjinron* doctrines bolster claims to national exceptionalism, while in both Japan and Malaysia political or geopolitical goals and principles are frequently formulated in terms of "Asian values" (Jenco 2013).
10. The Washington Consensus is a set of ten neoliberal policy measures formulated by the IMF and World Bank in 1990 for the purposes of structural adjustment (Sheppard and Leitner 2010, 186).
11. Ohnuki-Tierney 1993; Cwiertka 2006; Francks 2007, 2015; Verschuer and Cobcroft 2016.
12. Verschuer and Cobcroft 2016.
13. T. Smith 1959; Morris-Suzuki 1994; Saito 2009.
14. Francks 2007, 152.
15. Cwiertka 2006; Francks 2007.
16. T. Smith 1959; Bray 1986; Morris-Suzuki 1994; Francks 2015.
17. By the mid-1970s almost all rice farmers owned a full range of expensive mini-machinery; average chemical input rose to over 1 tonne per hectare, about ten times the US average (Tweeten et al. 1993; Francks 1996).
18. Kim and Lee 2005, 131–133.
19. Takada and Mogi 2013.
20. Francks 2007, 148.
21. "Rice Farming in Japan," 2013.
22. Takada and Mogi 2013.
23. Bray 2016.
24. *Ninth Malaysia Plan,* 2006, 89; Hill 2013, 251; Bray 2016.
25. Bray and Robertson 1980; Fujimoto 1991.
26. UMNO (the United Malays National Organization) led all governments between Independence and 2018; the smaller parties in the Barisan Nasional (National Front) coalition have varied over the years.
27. Jomo 2004, ii.
28. Fujimoto 1991, 436.
29. Hill 2012. See Hill (2013, 264) on how post-Independence policies to intensify rice production have persistently discriminated against non-Malay rice farmers.
30. Hirschman 1986.
31. T. G. Lim 1977.
32. Kratoska 1982; Hill 2012.
33. Kratoska 1982. Both laws are still in force today (Mohd 2013).
34. Fujimoto 1991, 431–432.
35. Siwar et al. 2014, 713; Peacock 1981, 641. Bray (2016) analyzes the reasons for this persistent poverty.
36. Alam et al. 2010, 252.
37. Hill 2013, 111.
38. Peacock 1981, 641, 643.
39. Fujimoto 1991, 432.
40. Bowen 1986. *Gotong-royong* is actually Indonesian Malay in origin; traditional Peninsular Malay equivalents include *tolong-menolong*, *berderau*, etc.

41. This involves either taking a house to pieces and reerecting it elsewhere, or simply lifting the entire house by its posts and carrying it to the new site (Firth 1966, 23).
42. Firth 1966, 58–71.
43. For an equivalent ethnobiology of breast milk and rice in Japan, see the chapter by Nakayama in this volume.
44. Carsten 1995, 223, 228.
45. Bray and Robertson 1980.
46. Fujimoto 1983.
47. On continued poverty despite state investment, see Bray (2016, 193ff).
48. Braudel 1990; L. Anderson 2013.
49. Cwiertka 2006.
50. Francks 2007, 161.
51. Francks 2007, 154.
52. Wilk 2012.
53. Francks 2007, 155–157.
54. Kushner 2014. On the South Korean craze for instant ramen, see the chapter by Kim in this volume.
55. Ahmad and Arabi 2017.
56. A former Minister of Tourism, quoted Suhaimi and Zahari (2014, 859). On tourism in the formation of "national" cuisine, see Wilk 2012.
57. Suhaimi and Zahari 2014.
58. Appadurai 1988; Avieli 2012.
59. See Avieli (2012, chap. 3) on tweaking rice dishes in Vietnam.
60. *Zongzi* are wrapped in lotus-leaves.
61. Suhaimi and Zahari 2014; Helland 2008, 16, 85.
62. See the chapters by Arnold, Kim, and Leung in this volume.
63. See the chapter by Nakayama in this volume.
64. Francks 2015.
65. Wilk 2012.

2 | Confronting the Cow

Soybean Milk and the Fashioning of a Chinese Dairy Alternative

Jia-Chen Fu

In the early twentieth century, milk became important to how Chinese intellectuals and scientists thought about China and its place within a wider world. Although dairy products and processes were continually introduced and reintroduced during earlier historical periods, for much of Chinese imperial history, milk represented alterity, especially in connection to nomadic and seminomadic peoples living in Central Asia and along the northern borders of the empire.[1] Milk was considered a medicine or tonic for the elderly, and sometimes the young, and when discussed in culinary treatises, milk was typically integrated in the cooking process: fermented, curdled, or cooked, as opposed to consumed raw or fresh. But as Françoise Sabban has emphasized, these culinary references to milk were "few and rather uncommon in the vast Chinese culinary repertoire."[2] Even after the birth of a nascent dairy industry in several Chinese treaty-port cities such as Shanghai, Harbin, and Beijing from the mid-nineteenth century onward, milk remained largely peripheral to the Chinese worldview. But as European and American conceptions of milk shifted over the course of the nineteenth century, and more and more Westerners came to drink and consider milk an indispensable food, so too were the Chinese increasingly confronted with ideas of milk's essential goodness, its place within a scientific world order of modern nutrition, and its role in making healthy, strong bodies. Earlier notions of alterity were not so much eclipsed as reoriented as milk became a symbol of Western wealth and power.

This chapter explores how the idea of milk's importance to the modern Chinese pursuit of wealth and power generated its own discursive and material experimentations with milk alternatives. Almost as soon as the Chinese found themselves faced with presentations that identified milk as the foundation of a modern diet that fueled the success of modern nations, they began exploring other possibilities that better suited China and the Chinese people. Soybean milk (*doujiang*), which had traditionally been a by-product of the process of making tofu, represented an especially conducive alternative. Spurred by the propagation of a nutritional paradigm that identified dairy as an essential food category in the human diet, and milk, in particular, as a critical protective food whose consumption ensured both individual and national fitness, Chinese entrepreneurs and scientists in the 1910s and 1920s began experimenting with ways in which to refashion a common food, *doujiang,* into a modern good food that we know of as soybean milk. As milk drinking became increasingly construed as integral to a normative diet, not drinking milk became a problem whose tidy resolution marked a first step toward creating and nourishing a modern China. By the 1930s, Chinese entrepreneurs' and scientists' efforts assumed heightened urgency as milk drinking became linked to concerns about child growth and development. Milk was not simply an ingredient for the national pursuit of wealth and power; it was an essential food for growing boys and girls. Here, too, soybean milk could serve as a viable, if not superior, alternative to cow's milk.

Chinese intellectuals such as Li Shizeng and Ernest Tso linked biomedical nutrition to the nation and in doing so contributed to the cultural and scientific refashioning of soybean milk as the modern antidote to China's status as the "sick man of Asia." Much of their advocacy was premised on the idea that soybean milk was a distinctly Chinese food whose functional role within the Chinese diet was akin to that of dairy. Whether or not this was in fact true mattered less than the implicit challenge to the bioculturalist assumptions of universality embedded in the Western celebration of milk.

The Milky Way

Scientific interest in milk and its chemical properties arose in the nineteenth century when scientists in Germany, France, and England, using newly developed techniques of analytical chemistry in the laboratory, began investigating the chemical compositions of foods, and of bodily fluids

and tissues. In 1827 the English physician William Prout (1785–1850) identified three elemental units of human sustenance—"the *saccharine,* the *oily,* and the *albuminous*"—that constituted the building blocks of flesh, bones, and human energy. Later chemists modified the terminology of this classification of ultimate foodstuffs: *carbohydrates,* coined in 1844 by Carl Schmidt and covering sugars and starches; *fats;* and *protein,* that is, substances that, like the white of an egg, coagulate on heating.[3] Milk, both human and bovine, was one of the foods that contained all three elements. Prout, in particular, extolled milk as both a universal and providential form of nourishment. "Of all the evidences of design in the whole order of nature," he argued, "milk affords one of the most unequivocal." "It is the only aliment designed and prepared by nature expressly as food; and it is the *only material* throughout the range of organization that is so prepared. In milk, therefore, we should expect to find a model of what an alimentary substance ought to be—a kind of prototype, as it were, of nutritious materials in general."[4] His celebration of the powers of milk traveled across the Atlantic and deeply impressed Robert Milham Hartley (1796–1881), a religiously inspired reformer in New York City and first director of the New York Association for Improving the Condition of the Poor. Hartley was keen on improving the supply of milk for infants of the poor. The growth of American cities had led to a decline in breastfeeding, and many, especially among the well-to-do, turned to fresh milk as an alternative to wet-nursing. But the most common form of milk available was "swill milk," which came from cows fed by the byproducts of urban breweries. Hartley lambasted cheap "swill milk" as morally and physically dangerous, and launched a campaign to rid New York City of its swill milk system and replace it with "pure" country milk brought into the city by rail. Using extensive scaffolding provided by the latest science, animal chemistry, he argued that milk was a perfect, God-given food for humanity—"the most perfect of all alimentary aliments."[5]

By the turn of the twentieth century, a general consensus had been established about the relations obtained between diet and physical vigor. It was widely accepted that health depended above all on sufficient energy intake (i.e., the calorie content of a diet) and the three major dietary elements: carbohydrates, fats, and proteins. Suspicions that this consensus was incomplete had been expressed by the French chemist J. A. B. Dumas after the Franco-Prussian War of 1871, but it was not until the first decade of the twentieth century that more fine-grained animal feeding experiments revealed the vital nutritional role played by hitherto unsuspected

dietary components.[6] The discovery of essential amino acids and vitamins dramatically shifted scientific interest away from the energy content of the diet as well as shifted scientific authority from chemical physiology to the newly established field of biochemistry.[7]

With respect to milk, perception of its value improved further as nutrition science recategorized it as a "protective food," that is, a food rich in minerals and vitamins. Milk was increasingly touted by nutrition scientists as nature's perfect food and was even designated the most important alimentary factor in the rise of modern civilization.[8] Elmer V. McCollum (1879–1967), who has been credited with the discovery of vitamin A—a key agent in enabling growth in animals and humans that he isolated from the fat of whole milk—insisted that "the consumption of milk and its products forms the greatest factor for the protection of mankind."[9] A hierarchy of foods emerged, and milk and milk products (including butter) consistently outranked other protective foods such as green-leafed vegetables and fruits.[10]

McCollum's scientific celebration of milk led him to see the world through the lens of milk.[11] Writing in 1918, McCollum suggested that the world's people could be divided into those whose diets included milk, and those whose did not. On the one side, "represented by the Chinese, Japanese, and the people of the Tropics, generally," were people who "employed the leaves of plants as almost their sole protective food. They likewise eat eggs and these serve to correct their diet." On the other side were the peoples of North America and Europe who have "likewise made use of the leaves of plants, but in lesser degree, and have, in addition, derived a considerable part of their food supply from milk and its products." The social and cultural consequences of these dietary differences were stark:

> Those people who have employed the leaf of the plant as their sole protective food are characterized by small stature, relatively short span of life, high infant mortality, and by contended adherence to the employment of the simple mechanical inventions of their forefathers. The peoples who have made liberal use of milk as a food, have, in contrast, attained greater size, greater longevity, and have been much more successful in the rearing of their young. They have been more aggressive than the non-milk using people, and have achieved much greater advancement in literature, science, and art.[12]

McCollum's celebration of milk as a vitamin- and mineral-rich protective food might have been dismissed as one man's fancy were it not for its

general acceptance within the scientific community. His book, *The Newer Knowledge of Nutrition,* based on the lectures McCollum gave at the Harvard School of Public Health in 1918, celebrated the "gospel of milk" and sold fourteen thousand copies in its first three years, and went into five editions by 1939.[13] Its influence can also be discerned in the League of Nations' 1936 *Final Report,* which McCollum helped author and which defined "correct nutrition" on the basis of "good" proteins (i.e., animal origin) and protective foods. Milk was ranked a "highly protective food" for its share of "good" proteins, minerals, and vitamins A, B, C, and D.[14]

Milk as Wealth and Power

The idea that a Western diet composed primarily of meat, wheat, and milk had distinct social and political advantages over a Chinese one had already entered the country by the end of the Qing dynasty. The *Qing bai lei chao* (Categorized anthology of petty matters from the Qing period) included an extended rumination on the differences between Eastern and Western diets and described the consequent bodily effects in the following manner:

> Food is essential for man. Orientals typically eat the five grains, while Occidentals typically eat meat. Those whose diets are based on the five grains have weaker bodies than those who eat meat diets. People who eat meat and fish are necessarily stronger than those who eat vegetarian.[15]

Dietary differences translated into different national vitalities, with those nations with richer, more bountiful foods dominating the world. For evidence, the author invited the reader to compare the foods eaten by an Indian as opposed to his British overlord and then concluded that if the Chinese were to eat the same diet as Americans and Europeans, one need not doubt that one day China too would become a powerful and prosperous nation.[16]

By this estimation, milk represented Western strength and prosperity, but the implication that the Chinese needed to change their traditional dietary practices in order to compete in the modern world was not accepted by all. As Angela Leung demonstrates in this volume, an early generation of late Qing and Republican political figures such as Wu Tingfang, Li Shizeng, and Sun Yat-sen saw in vegetarianism, if properly

understood and practiced according to scientific principles, "a moral food choice for a modernizing Asian nation" that acknowledged and advanced the natural strengths of China's agricultural and dietetic traditions.[17] Modern vegetarianism, these men argued, was healthy and hygienic. It represented the advancement of the forces of progress and science. To demonstrate its superior social and political value for Chinese society, they used the language of chemistry to validate their claims of nutritional potency and hygienic superiority.

With respect to milk, scientific vegetarianism's point of contestation lay not with the claim that drinking milk could marshal the Chinese along a path toward strength and prosperity, but rather with which kind of milk would better serve this purpose. We see this in the early writings of the anarchist turned elder Guomindang statesman Li Shizeng (Li Yuying, 1881–1973), who set up a "tofu factory" on the outskirts of Paris in 1909. In downplaying the essentialness of cow's milk to a modern diet, Li presented a Chinese alternative in the form of soybean milk, the chemical properties of which ensured a comparable, if not superior, alternative. Soybeans had not been a self-stated interest when Li left China in 1902 as a twenty-two-year-old and one of two hand-selected students designated to accompany Sun Baoqi (1867–1931), the newly appointed Minister to France. But once in France, Li's interest in soybeans blossomed through his embrace of vegetarianism and his studies at a French agricultural college (École Pratique d'Agriculture du Chesnoy) in Montargis, sixty miles south of Paris, and at the Institut Pasteur in Paris. At the Institut Pasteur, Li began research on "China's soybean problem" (*Zhongguo de dadou wenti*) and discovered for himself how the soybean plant exhibited some of the more curious characteristics of vegetable physiology.[18] In his own words, "From the perspective of agriculture, the soybean plant is a bit unusual and very productive. Its nitrogen-fixing properties surpass other more commonly used pulses. Finally, it must not be forgotten the number of industrial applications one can achieve with the oil and vegetable protein (*caseine de soja*) from soybeans."[19] Li's scientific investigations with the soybean focused especially on soybean milk, which he called *caséosojaïne,* and its potential to serve as a dairy substitute. Li thought it may be possible through innovations in handling and fermentation techniques to produce soybean milk amenable to the Western palate.[20] His application for a British patent, dated December 30, 1910, indicated that his invention produced a "vegetable milk and its derivatives by means of soja grains (Chinese peas)." The resulting milk

would have "the appearance, the color, and the taste of ordinary milk, its chemical composition greatly resembling the same. It has moreover approximately the same nutritive and alimentary properties."[21]

Li's growing passion for the soybean led him to propagate its virtues among France's scientific community. He spoke before the Société d'Agriculture de France, and, perhaps to everyone's surprise, attended the International Dairy Congress in October of that year, where his presentation to the attendees attracted media attention.[22] Speaking before an audience composed of prominent men "in the dairy and general agricultural circles of Europe," Li spoke earnestly of the Chinese practice of producing "milk" from a plant.[23] The entire world, Li remarked, recognized the many advantages associated with animal milk. And yet, the Chinese drank little of it. To explain this curious situation, Li postulated for ten minutes about the soybean and Chinese methods for producing soyfoods, which were not only similar in appearance to dairy products, but were comparable in chemical composition. China, with its vast and varied regions, and its humid soil and climate, was largely ill suited to the raising of cattle and livestock, Li explained. Excluding areas to the far north and east, which Li identified as "dairy regions" (*régions laitières*), most parts of China depended on soybeans, which could be made into a "vegetal milk, rich in proteins and fats," for its dairy needs.[24] Li's reference to there being "dairy regions" in China is curious precisely for its ellipsis of the people who traditionally lived in those areas. As Françoise Sabban and Susie Wang have shown, dairy products were not completely foreign to the Chinese diet, but their presence in past diets was often linked to the ruling dynasty.[25] A dual sensibility that perceived milk as a luxury as well as a foreign food more typical of the seminomadic non-Han tribes to the north and northwest was evident as early as the Three Kingdoms period (220–280 CE). Wang suggests that Chinese interest in cow's milk in the late nineteenth and early twentieth centuries was notable precisely because it ignored these earlier associations of milk with foreign dynasties, including the Manchu Qing, and instead reframed milk as a dietary ingredient in the rise of Western wealth and power.[26]

Li's passion for soybeans stemmed from his dedication to a vision of Chinese modernity that did not divorce itself from traditional crops but instead reinvented them with the help of modern science.[27] He believed that while foods differed from region to region, the essential qualities and nutrients making up such foods were universal. "Speaking of our country, Buddhist monks eat more tofu and *mianjin* (gluten) than ordinary people,

which is to say, they eat more meat than ordinary people, because [tofu and *mianjin*] are qualitatively the same as meat. Thus, these foods can substitute for meat."[28] Following the same reasoning, soybean milk could replace cow's milk in a modern diet.

Other Chinese homed directly in on the competitive dimensions of the soybean for navigating the brave new social Darwinian world. In an unattributed 1910 piece, "A Comparison of Soybean milk and Cow's milk," which appeared in *Zhongxi yixuebao* (Journal of Chinese and Western medicines), a journal established by the famous vegetarian and popular writer of new medical knowledge, Ding Fubao (1874–1952), the author, like Li Shizeng, highlighted soybean milk's more advantageous nutritional profile, which had been demonstrated not only by chemical analysis but also in connection with the medical treatment of patients. The author also praised Li Shizeng's success in "winning" over the French palate to soybean-made foods and went so far as to suggest that the shifting winds of progress were now moving from East to West. "It is unavoidable that soybean milk will become one of cow's milk's most formidable adversaries."[29]

Milk for Growth

In the 1920s, Chinese nutrition scientists and physicians expanded the discussion about what made soybean milk good by recasting its functions in terms of infant and child health. The earlier estimation of milk's importance to national wealth and power was upheld, but transmuted more directly into medical concern for feeding and caring for China's young. Milk was identified as critical for normal child growth and development. But within a setting with neither a longstanding dairy industry nor economical ways to obtain imported milk products, medical physicians focused on soybean milk as a locally available and affordable alternative to cow's milk that could nonetheless achieve comparable physiological results.

A handful of Western physicians and researchers had begun experimenting with the development of an infant formula based on soybean powder. As Hilary Smith shows in this volume, medical interest in milk intolerance was first described in 1901, but was understood primarily as a problem only in infants.[30] Because cow's milk was the primary substitute recommended for breast milk, an infant's milk intolerance could have mortal consequences. John Ruhräh's 1909 study on soybean milk for

children with cow's milk idiosyncrasy or allergy marked an important step toward solving this problem. Combining finely ground soybean flour with water and a bit of sodium chloride to taste, Ruhräh then boiled the thin gruel for fifteen minutes before feeding it to infants with diarrhea and digestive disturbances. His work with soybean flour led him to develop the first line of soy-based infant formula, which appeared commercially in 1929.[31] Most American and European medical researchers framed their investigations of soybean milk as a potential alternative or substitute for cow's milk in infant feeding.[32] Valuations of taste, consistency, nutritional content, and so on, were all measured against cow's milk, and as long as the soybean ensured normal and healthy growth for the child recipient, medical researchers praised the bean for its high concentration of essential amino acids, adequate amount of vitamin B complex, and rich amounts of phosphorus, potassium, and iron.[33]

Within China, the Western-style medical community adopted this framework of evaluating soybean milk in terms of its ability to compete with cow's milk, be it in terms of taste, consistency, or nutritional values. Their interest in soybean milk as a cow's milk alternative reflected the biomedical consensus that the absence of milk compromised the proper nutrition of young children, but it also flagged scientific interest in the economic constraints facing Chinese mothers. The Peking Union Medical College (PUMC) physician Ernest Tso (Zhu Shenzhi) was the first researcher in China to study the application of soybean milk for the purposes of infant feeding. Born in Wuchang in 1894, Tso began his medical education at Harvard Medical School of China in Shanghai, and in 1919 graduated with a medical degree from Harvard Medical School in Cambridge, Massachusetts. He stayed on in Boston for the next decade and worked at the Boston Children's Hospital and the Boston Floating Hospital for Sick Infants, before returning to China in 1931 to join the pediatric faculty of PUMC.[34] In his research on soybean milk, Tso invoked the authority of Elmer V. McCollum and repeated McCollum's assessment that "the diet of China, Japan, and other countries in which the same general habits prevail [i.e., lack of cow's milk], is not suited for the proper nutrition of young children."[35] In McCollum's words,

> The final goal is to strive to discover whether any dietary regimen in use by man best promotes his vitality to the maximum. There is good reason to believe that the Oriental diet of the type under discussion, is at best, but a

> second rate one, and that it is not capable of meeting the needs of a growing child except in special cases where the most fortunate selection of articles is made. It does not, in general, support vigorous health and stimulate effort to an advanced age.[36]

By citing McCollum, Tso seemed to suggest that the absence of cow's milk in the Chinese diet posed serious problems to child growth and development. Moreover, the not uncommon situations in which "a mother's milk fails" or "the family cannot afford either the employment of a wet-nurse or artificial feeding with cow's milk" raised serious concerns about what kind of nutrition Chinese infants were getting, if any.[37] With neither breast milk nor cow's milk, Chinese infants faced severe and potentially life-altering challenges that delimited the extent to which they could mature into robust, vigorous adults.

Thus, from both an economic and a physiological standpoint, Tso argued, investigating the growth effects of a soybean milk diet on a young infant warranted attention, because an alternative had to be found. Tso carried out his examination and observation for eight months on Baby Yao, who had been born in the PUMC Hospital on August 27, 1926. Because the growth record of the child during the testing period compared favorably with "the average development of breast-fed infants," Tso concluded that a diet mainly of soybean milk, "properly supplemented, . . . can be more or less comparable to cow's milk in nutritive properties."[38]

Scientific interest in soybean milk as infant food did not arise out of an attempt by the Chinese scientific community to demonstrate the inadequacy of breast milk.[39] The extent to which Chinese mothers during the 1920s shifted away from breastfeeding to artificial feeding methods is difficult to determine. Certainly, from roughly 1910 through 1915 onward, milk advertisements became regular features in several popular magazines, such as *Funü zazhi* (The ladies' journal) and the newspaper *Shenbao,* which suggests a degree of popularization of at least the idea of milk consumption for children and family.[40] Greater female participation in the burgeoning urban and industrial workforce may have also decreased breastfeeding rates, although further research remains to be done to substantiate this point. At the very least, Chinese medical emphasis on the importance of breastfeeding may have functioned as a defensive mechanism to stem the actual or perceived tide of women forgoing breastfeeding for alternative methods.[41] It may also have reflected the medical

community's concern for the impracticality of cow's milk as an infant food in China, given the limited extent of dairying and the prohibitive costs associated with buying fresh and canned milk.[42]

Throughout the 1920s and 1930s, popular and specialist journals printed column after column urging mothers to breastfeed their babies.[43] Many physicians argued that breast milk was the best prophylactic against diarrheal diseases and the best nourishment for superior growth and development—mentally and physically—of an infant child, and for building resistance to infection.[44] As one "Venerable Youth" explained, "Mother's milk is suitable for infant digestion. It is neither too thick nor does it cause diarrhea. There's no other food as exquisite and healthy in the world that can beat mother's milk."[45] Medical consensus during this period tended to emphasize the nutritional importance of breast milk to infant growth and development. Western physicians practicing in China and their Chinese colleagues were largely in agreement on this point. Popular press pieces in support of breast milk emphasized the economic extravagance, as well as the questionable cleanliness, of tinned cow's milk. Breast milk—something all women could produce if provided a happy environment and simple yet sufficient nourishment—represented the quintessential food for infants such that feeding infants breast milk was advantageous not only for the infant but for the mother as well.[46] The idea of breastfeeding, intentionally or not, was also conscripted into nationalistic campaigns to promote the consumption of Chinese-produced goods.[47]

For situations in which a woman has been chronically ill or unable to produce breast milk, the Chinese medical community provided instructions on how to introduce and provide artificial milk.[48] In a similar fashion to Japan, popular prescriptions tended to organize one's options into a hierarchy of milks, with cow's milk (i.e., tinned milk) being touted as the best alternative in cases where the mother could not breastfeed her infant.[49] Tso's research on soybean milk should be seen as an example of economic pragmatism through the language of nutrition science.[50] By arguing that soybean milk was nutritionally comparable to cow's milk, Tso presented a scientifically backed rationale for recasting a local foodstuff as a modern "good" food that supported child growth and development. In other words, soybean milk, precisely because it could be construed as chemically comparable to cow's milk, could thereby be used to achieve the same results.

Soybean milk's affordability and integration into local diets and agricultural practices were cited as distinguishing features that demarcated

it from the foreignness of cow's milk in the popular consciousness. As Tso explained in his 1928 study, "Soybean 'milk' is a native food used in certain parts of the country as a morning beverage. . . . [It] is five to ten times cheaper than cow's milk. [My] experiment tends to show that, properly supplemented, it can be made more or less comparable to cow's milk in nutritive properties."[51] An indigenous foodstuff with a presumed pattern of local consumption, the soybean represented to many Chinese researchers a uniquely Chinese contribution to nutritional science. For this reason, clinical researchers associated with PUMC, Yenching University, and later the Henry Lester Institute for Medical Research in Shanghai examined not only the chemical composition of soybean milk, as well as that of other soy-derived products, but also its place within local diets and its effects on growth and development.[52]

Tso's research on the positive growth effects of a soybean milk diet for infants quickly reached urban audiences. Within a year, Chinese reprints and summaries of his work had appeared in public health and medical journals.[53] In 1933, the bimonthly medical journal *Guangji yikan* (Kwang Chi medical journal), edited by Ruan Qiyu (1891–1946), reported that the city government of Nanjing had implemented a trial program to distribute soybean milk to infants to combat malnutrition. Initiated on National Day (October 10, 1933), the program was designed to provide poor families with a nutritious and affordable infant food that had been properly and scientifically produced. "Many of the city's infants suffer from poor nutrition. Infant nutriments like cow's milk and milk powder are too expensive." In 1935, the pediatrician Su Zufei cited Tso's research in her recommendation that soybean milk could solve the pervasive threat of undernutrition that haunted Chinese children. "Our standard of living is so low that [if faced with situations, such as] low supplies of cow's milk, insufficient breast milk, or recently weaned children, there's always a fear of undernutrition." Legumes, Su continued, were full of nutrients, and this fact was well understood by the general public. So long as soybean milk was scientifically produced to yield "4.4% of protein, 1.8% of fat, and 9.5% of water-carbon," its benefits for infant nutrition were proven.[54] At a price point significantly cheaper than cow's milk (ten times less!), soybean milk was affordable for middle-class and poor households. As further support for the value of soybean milk to infant nutrition, Su highlighted the decision by the Beiping Health Demonstration Station to use soybean milk in their infant feeding programs.[55]

Chinese medical research emphasized the nutritional equivalency of soybean milk and cow's milk. That such nutritional benefits could be derived at lower expenditures was touted as one of soybean milk's advantages as an alternative to cow's milk. But its advantages were not limited to cost. A young female dietician writing for *Beiping chenbao* (Beiping morning newspaper) in 1934 also highlighted the fact that soybean milk would not curdle or congeal in the stomach as cow's milk would. In other words, soybean milk was more easily digestible—an argument that had also been advanced by an earlier generation of Chinese proponents for modern vegetarianism.[56] In this case, soybean milk's greater digestibility was especially important, as an infant's stomach was vulnerable during its first year of life—the easier to digest, the greater the influence upon proper growth and development.[57] Not only was soybean milk more digestible, it was, some argued, more hygienic because it was specially bottled and delivered to one's home.[58] Although an observant commentator could minimize this apparent advantage by pointing out that cow's milk was also bottled and delivered, medical proponents of soybean milk for infants highlighted two additional distinguishing features: first, because soybean milk came from a plant, one need not fear contamination or illness resulting from a sick cow's milk production, and second, one could easily produce soybean milk at home, thereby circumventing concerns about poor packaging or mishandling.[59] By providing an affordable but also accessible alternative for cow's milk in infant feeding, soybean milk promised the nutritional advantages of cow's milk in a more digestible form. Its goodness derived as much from its nutritional profile as from its low cost and sanitary properties—all of which is to say that soybean milk was deemed a modern good food for growing the Chinese body. In the words of one Wen Zhongjie writing for *Kexue congkan* (Science collectanea), "One can hardly believe that soybean milk has all that we need nutritionally and is so affordable. If we Chinese can use it regularly, then the less well-off can still obtain good foods; infants without mother's milk can still obtain proper nutrients; they need not worry about [not] building a strong body or a robust race."[60]

Soy as the Other Milk

By the early twentieth century, the Western scientific community had come to extol the virtues of dairy milk as an integral component of human nutrition, nature's perfect food, and later an essential protective food

whose presence in local dietaries could serve as the alimentary benchmark for determining the rise of modern civilization. Nations could be ranked according to what they ate, and without milk, the likelihood of a nation rising to the ranks of the progressive few was small. Without milk, as chemists such as Elmer V. McCollum explained, nations suffered from poor physiques, shortened lives, high infant mortality, and stunted literature, science, and art. To be without milk was to be excluded from the progress of man and modern civilization.

This message of dietary destiny and the importance of the "power cuisines" of nineteenth-century imperialist nations informed the mindset and activities of men such as Li Shizeng and Ernest Tso, who internalized the modernist demand for milk but attempted to subvert its universalizing reach by querying which milk.[61] That cows should be the primary or sole benefactor of such nutritional and civilizational goodness seemed to contravene the wealth and diversity of China's own experiences. For Li, soybean milk represented a vision of Chinese modernity achieved through the reinvention of existing agricultural practices with the aid of modern science and technology. That the rest of the world might esteem cow's milk and its products did not, in and of itself, necessitate that the Chinese too should do the same. If anything, modern science and the language of biochemistry testified to the power of alternatives such as soybean milk to achieve the same ends. The goodness of cow's milk could also be found in soybean milk.

By the late 1920s, the importance of soybean milk as a Chinese alternative to cow's milk arose in connection to growing concern for Chinese infant and child health. Ernest Tso framed the quest to improve infant and child health as an economic and social problem for which soybean milk was uniquely positioned to solve. As a local customary food and byproduct of the tofu-making process, soybean milk was both more available and more affordable than cow's milk. With medical research undertaken to confirm its nutritive properties and positive influence on child growth and development, medical proponents of soybean milk also characterized the drink as more digestible for infantile stomachs and as more hygienic for its association with modern bottling and distribution. That soybean milk could also be made at home suggested a degree of control and security not otherwise available with fresh or tinned cow's milk. The importance of milk and its alternatives for Chinese intellectuals and scientists from the 1910s through the 1930s

delineated a broader concern for how China ought to develop and its place within a global community of modern nations. For China, "got milk" may have been the prerequisite for modern progress, but "which milk" represented the more pivotal concern.

Notes

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1. During the Tang period, milk products formed a significant part of the diet of the upper classes, but the long-term effects of this dietary practice remained tied to the dynasty itself. For a general introduction, see K. C. Chang, ed., *Food in Chinese Culture: Anthropological and Historical Perspectives* (New Haven, CT: Yale University Press, 1977), especially Edward H. Schafer's chapter on the Tang.
2. Françoise Sabban, "Session 4: To Each His Own Milk, Questions and Responses with Françoise Sabban," "Cultures des laits du monde," Ocha International Symposium, May 6–7, 2010, Musée national d'histoire naturelle, Paris.
3. Gerrit Jan Mulder, physician and professor of chemistry at Utrecht, coined the term "protein" in 1838.
4. Quoted in Deborah M. Valenze, *Milk: A Local and Global History* (New Haven, CT: Yale University Press, 2011), 164.
5. E. Melanie DuPuis, *Nature's Perfect Food: How Milk Became America's Drink* (New York: New York University Press, 2002), 21–25, 35.
6. E. V. McCollum was the first to highlight Dumas' observations in "Who Discovered Vitamins?" *Science* 118 (November 1953): 632.
7. Harmke Kamminga and Andrew Cunningham, eds., *The Science and Culture of Nutrition, 1840–1940* (Amsterdam: Rodopi, 1995), 10.
8. DuPuis, *Nature's Perfect Food;* and Valenze, *Milk,* chap. 9.
9. Elmer V. McCollum, *The Newer Knowledge of Nutrition: The Use of Food for the Preservation of Vitality and Health* (New York: Macmillan, 1918), 67; and Valenze, *Milk,* 239.
10. League of Nations, *The Problem of Nutrition,* vol. 2, *, Report on the Physiological Bases of Nutrition* (Geneva: League of Nations, 1936), 15.
11. Valenze, *Milk,* 251.
12. McCollum, *Newer Knowledge of Nutrition,* 150–151.
13. Valenze, 2 *Milk,* 49.
14. For a detailed discussion of how Chinese dairymen and supporters of cow's milk in the 1930s and 1940s presented milk as a scientific habit fit for a modern nation and a key ingredient to China's success in the evolutionary struggle to survive,

see Susan Glosser, "Milk for Health, Milk for Profit: Shanghai's Chinese Dairy Industry under Japanese Occupation," in *Inventing Nanjing Road: Commercial Culture in Shanghai, 1900–1945,* ed. Sherman Cochran (Ithaca, NY: Cornell University Press, 1999), 207–233. League of Nations, *Nutrition: Final Report of the Mixed Committee of the League of Nations on the Relation of Nutrition of Health, Agriculture, and Economic Policy* (Geneva: League of Nations, [1937]), 60–64.

15. Quoted in Susie Wang, "Buyu Zhongguo: Jindai Zhongguo de niuru xiaofei—20shiji er, sanling niandai Shanghai wei zhongxin de kaocha" (Bolstering China: Modern Chinese milk consumption in Shanghai during the 1920s and 1930s), *Journal of Chinese Dietary Culture* 7, no. 1 (2011): 215.

16. Ibid.

17. See the chapter by Leung in this volume.

18. Li Shizeng, "Ershier sui chuyou sihai" (See the world at the age of twenty-two), in *Li Shizeng xiansheng wenji xiace* (Taipei: Zhongguo guomindang zhongyang weiyuanhui dangshi weiyuanhui, Zhongyang wenwu gongyingshe, 1980), 74; Li Yuying, *Da Dou: Le Soja* (The soybean) (Paris: Société biologique de l'Extrême Orient, 1910); and Li Shuhua, "Xinhai geming qianhou de Li Shizeng xiansheng" (Li Shizeng before the Xinhai Revolution), *Zhuanji wenxue* 24, no. 2 (1974): 42–46; reprinted in *Li Shizeng zhuanji ziliao,* vol. 1 (Taipei: Tianyi chubanshe, 1979), 47–49.

19. Li Yuying, "Le Soja," *L'Agriculture pratique des pays chauds* 11, no. 2 (September 1911): 178.

20. Charles Lemarié, "Les sojas du Japan," *Bulletin économique de l'Indochine* (Hanoi) 13, no. 85 (1910): 493–498.

21. Li Yuying, "Vegetable Milk and Its Derivatives," British Patent 30275, filed December 30, 1910, and accepted February 29, 1912, cited in Shurtleff and Aoyagi, *Li Yu-ying (Li Shizeng),* 26. Li was incredibly active in patenting his various soybean-related products and techniques. Alongside this application for "vegetable milk," Li also applied and received British patents for "sauce consisting chiefly of soja grains" and "soja flour and its derivatives," as well as French patents for soybean-made meats and cold cuts and chocolate. He also received an American patent in 1913 for his "method of manufacturing products from soja."

22. For references to his presentation to the French Society of Agriculture, see H. Hitier, "Société Nationale d'Agriculture de France: Le soja," *Journal d'agriculture pratique* 74, no. 1 (1910): 24–25; and Henri Blin, "Le soja ou fève de Mandchourie: Productions et utilisations" (The soybean or bean of Manchuria: Production and utilization), *La Nature* (Paris) 38, no. 1 (1910): 141–142, both cited in William Shurtleff and Akiko Aoyagi, comp., *Li Yu-ying (Li Shizeng)—History of His Work with Soyfoods and Soybeans in France, and His Political Career in China and Taiwan (1881–1973): Extensively Annotated Bibliography and Sourcebook* (Lafeyette, CA: Soyinfo Center, 2011), 17, 21.

23. United States Department of Agriculture, *The International Dairy Federation and International Dairy Congresses* (Washington, DC: US Department of Agriculture, Bureau of Animal Industry, 1904), 9–10.

24. "Bulletin agricole et horticole: Le Congrès international de laiterie," *La Gazette du Village* 42, no. 2 (January 8, 1905): 719; and Fédération internationale de laiterie—Comié français, *2^e^ Congrès International de Laiterie Paris, 16–19 Octobre 1905: Compt-rendu des séances, excursions, liste des congressistes* (Paris: Condé-sur-l'Escaut, Impr. F. Descamps, 1905), 387–389.

25. Sabban, "Session 4," 211.

26. Wang, "Buyu Zhongguo," 214–215.

27. Jia-Chen Fu, *The Other Milk: Reinventing Soy in Republican China* (Seattle: University of Washington Press, 2018).

28. Li Yuying, "Dadou shipin zhi gongyong" (Uses of soybean-derived foods), *Tongwen bao: Yesujiao jiating xinwen* 417 (1910): 7.

29. The author overstates Li's success. As Angela Leung notes, his factory was unprofitable and quickly became reliant on French government subsidies for making soya products for Chinese soldiers fighting for the French government. "Douru yu niuru zhi bijiao" (A comparison of soybean milk and cow's milk), *Zhongxi yixue bao* 8 (1910): 8; see also note 32 in the chapter by Leung in this volume.

30. See the chapter by Smith in this volume.

31. Frank T. Faulkner, *Infant and Child Nutrition Worldwide: Issues and Perspectives* (Boca Raton, FL: CRC Press, 1991), 232; and William Shurtleff and Akiko Aoyagi, "History of Soymilk and Dairy-like Soymilk Products," Soy Info Center, accessed August 3, 2011, http://www.soyinfocenter.

32. On the rise of artificial infant feeding in the United States and Britain, see Rima D. Apple, *Mothers and Medicine: A Social History of Infant Feeding, 1890–1950* (Madison: University of Wisconsin, 1987); Valerie A. Fildes, *Breasts, Bottles, and Babies: A History of Infant Feeding* (Edinburgh: Edinburgh University Press, 1986); and Samuel J. Fomon, "Infant Feeding in the 20th Century: Formula and Beikost," *Journal of Nutrition* 131 (2001): 409S–420S.

33. An emphatically positive assessment of soy milk's nutritive properties appeared in the *Chinese Medical Journal*'s special issue on pediatrics in April 1936. The authors, H. W. Miller and C. Jean Wen, physicians at the Shanghai Sanitarium and Pediatric Department of the Shanghai Clinic. Miller, a Seventh-day Adventist medical missionary, arrived in China in 1903 and began investigating the potential benefits of soy milk for human nutrition around 1925. He developed a "nutritious milk" from soybeans to give patients at his Shanghai Sanitorium. Raymond S. Moore, *China Doctor: The Life Story of Harry Willis Miller* (New York: Harper and Brothers, 1961), 126. See also the chapter by Leung in this volume.

34. "Who's Who in China: Dr. Ernest Tso," *China Weekly Review,* September 24, 1932, 167.

35. Quoted in Ernest Tso (Zhu Shenzhi), "The Development of an Infant Fed Eighth Months on a Soybean Milk Diet," *Chinese Journal of Physiology* 2, no. 1 (1928): 33–40. The original quote comes from McCollum's discussion of the "Oriental Diet" in *Newer Knowledge of Nutrition*, 399.

36. Elmer V. McCollum, *The New Knowledge of Nutrition: The Use of Food for the Preservation of Vitality and Health*, 2nd ed. (New York: Macmillan, 1922), 399.

37. Ernest Tso , "Development of an Infant," 33.

38. Ibid. Tso does not explain why Baby Yao was transferred to the Pediatric Service almost a month after his birth, nor does he elaborate on the circumstances that led him to use Baby Yao for the experiment.

39. For an exploration of how breastmilk was increasingly seen as the material manifestation of proper motherhood in Japan, see the chapter by Nakayama in this volume.

40. Sabban, "The Taste for Milk in Modern China (1865–1937)," in *Food Consumption in Global Perspective: Essays in the Anthropology of Food in Honor of Jack*

Goody, ed. Jakob A. Klein and Anne Murcott (Basingstoke, UK: Palgrave Macmillan, 2014), 194.

41. It may also have reflected revaluations of women and motherhood in a period of intensive cultural and social upheaval. Further research on this topic to come.

42. According to B. S. Platt, an associate researcher in the Division of Clinical Research of the Henry Lester Institute of Medical Research (Shanghai), "The facilities afforded in China at the present time for introducing such substitutes for human milk are so limited that no useful purpose can be served by extended discussion." B. S. Platt, "An Approach to the Problems of Infant Nutrition in China," *Chinese Medical Journal* 50 (April 1936): 417.

43. See, for example, "Xiao'er tianran de buru zhi jiazhi" (The value of natural breastfeeding for infants), *Shenbao* (May 17, 1923); Aibo, "Ying'er yinshi de wenti" (The infant food problem), *Weishengbao* 2, no. 16 (1930): 15; and Shao Wenshan, "Tantan ying'er weisheng de jijian zhongyao wenti" (A discussion of a few infant hygiene issues), *Yiyao pinglun* 55 (1933): 54–55.

44. Platt, "Approach," 415–416.

45. Laoshao nian, "Ying'er buru wenti" (Infant feeding problem), *Zhongguo kangjian yuebao* 1, no. 4 (1933): 55.

46. Aibo, "Ying'er yinshi de wenti," 15.

47. See Sabban, "Taste for Milk in China," 195. Incidentally, Chinese dairymen also attempted to present their commercial forays into dairying as nationalistic enterprises, such that buying fresh milk could also be construed as supporting China against foreign aggression and imperialism. See Wang, "Buyu Zhongguo," 218.

48. The more common practice prior to the twentieth century was to employ a wet nurse. To this end, classical medical authors went into considerable detail delineating the importance of obtaining a wet nurse with the right sorts of physical qualities and character attributes. The emphasis on artificial milk, be it from an animal or a plant, seems to be part of the larger project of modern motherhood that rendered "natural" acts as transparent acts (i.e., descriptions and images of how gestation and birth actually occur), guarded the nuclear family against interlopers (e.g., wet nurses), and overlaid female reproduction with responsibilities to the nation-state. More work remains to be done about the politics of wet nurses and changes in conceptions of the human and human fluids in twentieth-century China. See Hsiung Ping-chen, "The Nurse the Young: Breastfeeding and Infant Feeding in Late Imperial China," *Journal of Family History* 20 (September 1995): 217–238; Hsiung Ping-chen, *A Tender Voyage: Children and Childhood in Late Imperial China* (Stanford, CA: Stanford University Press, 2005), 83–90; and Tina Phillips Johnson, *Childbirth in Republican China: Delivery Modernity* (Lanham, MD: Lexington Books), 2011, 35–72.

49. See, for example, "Yu er fa" (Caring for infants), *Shenbao,* December 23, 1917; "Yu er fa zai xu" (Caring for infants continued), *Shenbao,* December 25, 1917; "Ying'er tiaoyang fa" (How to take care of infants), *Shenbao,* March 17, 1921; and "Lun jiating jiaoyu" (On family education), *Shenbao,* January 8, 1922.

50. For other medical studies encouraging the use of soybean milk as infant food, see, for example, A. C. Siddal and Y. T. Chiu, "A Feeding Experiment with Soybean Milk," *Lingnan Science Journal* 10, no. 4 (1931): 387–391; and Wen Zhongjie, "Huang douru zhi yanjiu" (Research on soybean milk), *Kexue congkan* 3 (1930): 1–19; "Douru, huashengru, yumi mian yu niurufen yingyang jiazhi zhi bijiao" (A comparison of the nutritional values of soybean milk, peanut milk, corn flour noodles, and cow's milk), *Nankai daxue yingyong huaxue yanjiusuo baogaoshu* 3, no. 0 (1935): 71–76.

51. Tso, "Development of an Infant," 33.

52. See, for example, William H. Adolph, "How China Uses the Soybean as Food," *Journal of Home Economics* 43 (1922): 63; Wu Guangli, "Douru jiaoti huaxue zhi yanjiu" (Research on soybean milk colloid chemistry), *Ziran kexue* 2, no. 4 (1930): 41–54; Wen Zhongjie, "Huangdouru zhi yanjiu" (Research on soybean milk), *Kexue congkan* 3 (1930): 1–19; K. J. Chang and Ernest Tso, "Soybean Milk," *Chinese Journal of Physiology* 5 (1931): 199; and A. A. Horvath, "Nutritional Value of Soybeans," *American Journal of Digestive Diseases* 5 (1938): 177–183.

53. Tso's study was printed in Chinese as "Yong douru bu ying'er zhi chengji," *Weisheng yuekan* 4 (1928): 5–11. Summaries, discussions, and reprints of his work can be seen in "Yong douru bu yinghai zhi chengji," *Weisheng gongbao* 2 (1929): 1–6; Zhang Zeyao, "Zazu: Yong douru bu ying'er de chengji," *Kexue* 14, no. 5 (1930): 731–736; and Zhu Shenzhi, "Yong douru bu yinghai zhi chengji," *Yixue zhoukanji* 4 (1931): 52–55.

54. Su Zufei, *Ertong yingyang* (Child nutrition) (Shanghai: Yamei gufen youxian gongsi, 1935), 16.

55. See "Yijie xiaoxi: Jingshi weisheng shiwusuo faming doujiang buying" (Medical world news: Nanjing health office invents doujiang for feeding infants), *Guangji yikan* 10, no. 10 (1935): 6.

56. Su Fei, "Dou ji douru" (Soybeans and soybean milk), *Beiping chenbao*, March 3, 1934; see also the chapter by Leung in this volume.

57. "Doujiang ke dai rennai" (Soybean milk can substitute for breastmilk), *Xing Hua* 32 (1935): 18–19. See also "Yong douru bu yinghai zhi chengji" (Results of using soybean milk to feed children), *Weisheng gongbao* 2 (1929): 5.

58. See, for example, "Jishi: Sanduo douruchang faxing doufujiang" (News about town: Sanduo soybean milk company has begun selling soybean milk), *Wujiang* 30 (1922): 1; "Zawen: doujiang shangshi" (Miscellaneous news: Soybean milk has reached the market), *Qinghua zhoukan* 322 (1924): 24; "Doujiang zhi fenxi" (*Doujiang* analysis), *Nankai daxue yingyong huaxue yanjiusuo baogaoshu* 1, no. 0 (1933): 21–22.

59. "Zuo douru de fazi" (Method for making soybean milk), *Guanhua zhuyin zimu bao* 100 (1920): 20–22; "Shi Weisheng shiwusuo faming doujiang buying" (City Health Bureau discovers the *doujiang* for infants), *Guangji yikan* 10, no. 10 (1933): 92–93; and Ming, "Xinfa zhi doujiang" (New method for making *doujiang*), *Jiaoyu duanbo* 1 (1934): 51.

60. Wen Zhongjie, "Huangdouru zhi yanjiu" (Research on soybean milk), *Kexue congkan* 3 (1930): 2.

61. Rachel Laudan, "Power Cuisines, Dietary Determinism, and Nutritional Crisis: The Origins of the Globalization of the Western Diet," paper presented at the conference "Interactions: Regional Studies, Global Processes, and Historical Analysis," Washington DC, February 28–March 3, 2001, accessed December 20, 2015, http://webdoc.sub.gwdg.de.

3 | Moral Responsibility for Nutritional Milk

Motherhood and Breastfeeding in Modern Japan

Izumi Nakayama

In 2007, the Education Rebuilding Council, a Japanese government consultative committee formed under the first Abe cabinet, outlined these very specific methods of breastfeeding as two of its eleven recommendations for "parental education" (*oyagaku*): "Breastfeed your child while singing a lullaby and looking into his/her eyes. Do not watch TV while breastfeeding." If mothers failed to provide such careful attention to their offspring while breastfeeding, some members of the ERC claimed, these children could grow up to suffer from learning disabilities and other developmental problems, including Asperger's syndrome.[1] To the dismay of many, this so-called parental education gained momentum when a multiparty Federation of Diet Members Promoting Parental Education was established, chaired by prime minister Shinzō Abe, and the term "parental education" was incorporated in policies on revising national and moral education by the Ministry of Education and Culture, Sports, Science, and Technology. While such twenty-first-century pseudoscientific claims, supported by intensifying neoconservative and neonationalistic discourses, expose the contemporary crises of gender politics, these debates over breast milk are not new. From the late nineteenth century onward, Japanese social commentators, medical doctors, and educators, among others, promoted new moral, nutritional, and scientific interpretations of breastfeeding by only the biological mother, discouraging the employment of wet nurses and other alternatives.

Breast milk and its nutritional and symbolic value have been historically redefined by social, cultural, political, and medical interests and perspectives. While such politicization is certainly not limited to Japan or to the modern era, this chapter focuses on a specific moment to highlight the historicity of breast milk and motherhood during the Meiji (1868–1912) and Taishō (1912–1926) eras. It examines the shifting discourses on motherhood and breast milk in the context of the emergence of the commercialization of cow's milk and milk powder in the late nineteenth and early twentieth century. The public defining of breastfeeding as an essential "duty" of motherhood arose at the turn of the last century when commercialized alternatives, such as cow's milk, condensed milk, and milk powder produced from cow's milk, became readily available for consumption. The new technologies of preserved milk and milk-related modern commodities contributed significantly to the formation of a national public discourse on the value of the birth mother's breast milk for the health of the nation—in other words, the notion that "breast is best." As part of the nation-state building process, the nutritional value of the biological mother's breast milk was linked to her importance as the "mother of the nation." These pressures for breastfeeding are socially and historically specific, as the value of breast milk and its connotations shifted accordingly. Breast milk often represented more than simple nutrition—it represented the ways in which mothers were viewed as responsible for the physical and moral health of their biological children.

Wet Nurses and Breastfeeding Practices before the Meiji Period

The practice of only biological mothers breastfeeding their children might not be a concept frequently questioned, but the constant references to and existence of wet nurses in Japanese historical texts require it. In such classic literary texts as *Kikki* and *Imakagami,* dating back to the twelfth century, the prominent role of a nursemaid is described as being divided into either childcare or breastfeeding. According to Katō Mieko, this separation of labor was partly based on the major tenth-century medical compilation *Ishinpō,* which viewed accumulated breast milk as a source of illness for the woman, and partly came about as a result of imperial family power struggles involving wet nurses in the Heian period (794–1192).[2]

Examining the power hierarchies involving nurses and their families, Tom Conlan has explained how wet nurses rose to power in the eleventh century as a means for the imperial family to undermine the growing Fujiwara clan influence at the court.[3] These textual evidences of structures of power involving wet nurses, however, focused on the imperial court and other noble families, and it is unclear to what extent such practices were followed by other sectors of society. Even in the Kamakura period, however, there are sources recording the political and social nature of wet nurses outside of the imperial court, where a single warrior family could retain numerous wet nurses from its vassals as a mechanism to strengthen the relationship between the house and its retainers.[4] Hence, in these earlier periods, the wet nurse was an established institution in elite households, and for those at the top of the social scale, breast milk was effectively provided not by the mother but by social inferiors.

By the Tokugawa period (1600–1867) there were two kinds of nurses that were employed by the wealthier families, whether courtier, samurai, or merchant: one who held (and presumably took care of) the baby, and another who breastfed babies.[5] Yet there were also breastfeeding rituals practiced by most families, regardless of social or economic status, and the most prominent of these was called "first milk," or *chichitsuke*. In this ritual, not the mother but a similar-status woman in the community who had recently given birth would be invited to provide the newborn with its first taste of breast milk, and would be called the "first milk parent." This woman, along with her husband, became the breastfeeding version of a godmother, maintaining a lifelong relationship with the birth family and child.[6] Often a newborn boy would be "parented" by a woman who recently gave birth to a girl, and vice versa.[7] Yet the role of breast milk and its value depended heavily on interpretations of its roles in transferring personal characteristics, social hierarchy, and potential toxins. Kajitani Shinji, a historian of medicine, argued this point in his study of child-rearing manuals, which demonstrated the rise of pervasive culture of prescriptive breastfeeding guidance from the late eighteenth century onward.[8]

Two striking themes are apparent in these child-rearing manuals. First, there is the notion that breast milk may transmit personal and status-based characteristics to the newborn baby. In both a 1703 child-rearing manual by Katsuki Gyūzan (1656–1740), and what is considered Japan's first nursing manual, *Byōkasuchi* (Necessary knowledge for families with sick patients), published in 1832 by Hirano Jūsei (1790–1867), the

authors clearly presume that new mothers are employing wet nurses. They strongly counsel against it, urging mothers to breastfeed their own babies, at least initially, and not employ wet nurses, regardless of their wealth or status. One reason given for this was that it would allow the mothers to rest their bodies and delay menstruation and so also the possibility of quickly becoming pregnant again. It was advice to protect the health and longevity of women. Yet, according to Gyūzan, breastfeeding, indeed, the breast milk itself, brought with it risk of significant health hazards. It transferred heat when the woman ate hot foods in the summer, causing the infant to vomit; if the woman was sad prior to breastfeeding, the baby experienced drooling and coughs, among many other conditions. Most importantly, doctors in the eighteenth and early nineteenth centuries strongly believed that breast milk transferred to the child some elements of the woman's personal character, dignity, and manners, as befitting her status. Wet nurses, these elitist doctors presumed, might well possess a temperament that was devious or perverse, as befitting their lower status; at the very least, their lack of refinement could negatively influence a baby through the breast milk.[9] So, writing for biological mothers who could afford nurses and were therefore assumed to be their social status superiors and, hence, appropriately refined and pleasant, these medical experts encouraged women to breastfeed their children to avoid the transferal of the inherently negative personal qualities of low-status wet nurses.

The second notable theme in these Tokugawa medical texts represents a changed view of the relationship between breast milk and what was called "fetal poison" (*taidoku*).[10] The "first milk," or the colostrum, produced from the new mother was considered to be terribly dangerous for the baby to ingest, as it was visibly different (yellow and thick) from subsequent breast milk. This, indeed, was a justification for employing wet nurses. Doctors such as Katsuki Gyūzan believed that "fetal poison," a black, sticky substance that collected in the newborn baby's mouth, was the source of all illnesses, especially smallpox, if ingested, and had to be removed immediately upon birth. The most common methods for expelling the toxin was to feed the baby something emetic or to cause diarrhea, often using five spice and Chinese licorice. By the mid-nineteenth century, however, doctors such as Oka Ryōin, a Bakufu medical officer specializing in pediatrics, explained how the "first milk," because of its toxicity, was a useful laxative for expelling the "fetal poison." Thus, he urged mothers to breastfeed their babies.[11] In these texts, the argument for breastfeeding

was not necessarily linked to any presumed ideas about motherhood or maternal duties beyond a duty to preserving the health and character of their children. The Tokugawa medical promotion of breastfeeding was aimed solely at the highly specific objectives of impeding the transfer of undesirable social-status-determined character qualities from the wet nurse and encouraging the mother to use her milk for the expulsion of fetal poison.

As these texts most certainly catered to an audience largely situated in cities and towns that could afford to employ wet nurses, they seemingly offer little insight into conditions or practices of those of lower status and economic levels and located in rural or remote communities. And such texts do not necessarily reflect the reality but rather the desire for such ideals to be realized. There is some scholarship, however, such as the groundbreaking work of the historian Sawayama Mikako on reproduction and the practice of adopting abandoned children in Tokugawa-period Osaka, that suggests no partiality for the biological mother's breast milk in common urbanite social practices. Sawayama, in her examination of "receiving milk," a community practice of providing breast milk to neighbors that became commodified, with women selling this service and product, argues that this was an important way in which both abandoned babies and those raised by mothers with insufficient breast milk survived. For example, Katō Hiroyuki (1836–1916), prominent politician and second president of Imperial Tokyo University, is one among many historical figures who notably were raised by "receiving milk" from neighbors and friends, due to the lack of breast milk from his mother and the family's inability to hire a wet nurse because of the Tempō famine.[12] Indeed, the Tokugawa medical texts also note common means of dealing with the absence of maternal breast milk, in particular a type of boiled and strained flour, *omoyu,* employed as a breast milk replacement.[13] Even though it appears that most women would have breastfed their own children if possible, clearly the survival of the babies was more important than the origins of the breast milk itself.

New Meiji Milk Substitutes: Cow, Condensed, and Soy Milks and "Infant Formulas"

By the early Meiji period, new types of beverages that some argued could be consumed as breast milk substitutes became available in urban areas. The availability of such commercial products and questions of food safety

and nutritional limitations served to propel the increased consideration of human breast milk, and in particular, that of the mother. Dairy products in Japan reemerged in the late Tokugawa period through increased contact with the Dutch and through translated medical texts, in which milk was presented as one of the sources of the "West's" physical superiority. Supposedly during the Heian period, the Imperial Medical Bureau (Tenyakuryō) had a Cow's Milk Section (Nyūgyūin), which cultivated cows and produced milk for food and health tonics at the imperial court.[14] By the Meiji period milk became a dietary element of Japan's nation-state building project to strengthen Japanese bodies to stand up to the Westerners. Leading political and medical figures supported its consumption, not least because this provided new employment opportunities for thousands of recently unemployed samurai. Newspapers reported how the Meiji emperor drank milk "twice a day"; the imperial household lecturer on poetry and literature, Kondō Yoshiki (1801–1880), was commissioned by the Meiji government to write in praise of milk in 1871. In his *Thoughts on Milk,* Kondō denied that drinking milk was a "Western" imported practice, emphasizing the long history of imperial and courtier families drinking milk and consuming *so,* a cheeselike delicacy supposedly from the eighth century. He pointed to how easily spoilable milk was and the importance of heating it to produce what he called "*rennyū*"—the term later used for condensed milk. This was, in effect, a process of thermization to improve safety.[15] Matsumoto Ryōjun, the *Rangaku*-trained personal physician to the last shogun and the first Meiji army surgeon general, was also one of the strong proponents for using fresh cow's milk and beef for improving the Japanese diet. In an 1876 coauthored report, Matsumoto explained how fresh milk was extremely nourishing, and was very effective for those suffering from pulmonary diseases (including tuberculosis) as well as for babies deprived of breast milk.[16]

This purported nutritional advantage, supported by the political rhetoric of "strengthening the nation," was used to advertise milk, with calls to fellow citizens to consume it in large quantities. Such advertisements pointed to the need for children to drink milk, as it would naturally increase their perseverance and render their bodies sound, healthy, and strong. The benefits of milk were such, the advertisements recommended, that mothers should feed babies with it using a baby bottle aptly called a "wet nurse unnecessary." Made of glass with a long rubber straw, these bottles were first imported in 1871, and were being produced domestically by the 1890s. Claiming that babies in the "West" start consuming milk

through this apparatus after three months, the advertisement also noted the additional benefits of not having to worry about the payment for wet nurses and not having to be concerned about their physical and moral conditions. Furthermore, it noted that cow's milk was more nutritious than *omoyu,* or even the breast milk of a wet nurse, which, produced by a woman who typically had given birth more than a year earlier, would be less nutritious.[17]

Yet "freshness" was difficult to maintain, as Kondō noted, for refrigeration technologies and distribution infrastructures were inadequate for extensive distribution of milk. While he was writing in 1871 questioning the safety issues regarding fresh cow's milk, it took some decades for the government health officials and police to assess and regulate milk. In the early years of Meiji when Kondō was writing, milk was often sold in volume by ladling it out of large containers into the pots and pans of individual households, raising public health concerns. By 1889, to reduce exposure to bacteria, milk bottles were required but it was another decade before further hygienic measures were implemented in 1900, when a decree on milk business regulations called for steam sterilization in the milk bottles. Two more decades passed before the Japanese government, in 1927, finally regulated the quality of the fresh milk industry by issuing a new law requiring all milk producers to pasteurize their products by the following year.[18]

Thus, canned milk appeared to be the safer choice until sterilization of milk was made mandatory in Japan. The term Kondō used, "*rennyū,*" used initially to describe heated milk, was later applied to condensed milk, which was also heated but included added sugar and was canned to extend its durability. Without consistent and readily available fresh milk in certain regions, condensed milk, developed by Frenchman Nicolas Appert in 1820 and commercially produced under the Eagle brand by the American Gail Borden in 1853 and popularized during the American Civil War, began to be imported.

First imported in the early Meiji period as a "medical product" to be consumed by the ill, condensed milk was considered by pediatricians to have such an excessive amount of added sugar that they discouraged mothers from using it as a breast milk substitute. Canned milk was clarified and standardized raw milk, which had been heated to destroy microorganisms and to evaporate water; the added sugar (with differing ratios of sugar to milk, but often 9 to 11) inhibited the growth of microorganisms

by increasing the milk's osmotic pressure (concentration), extending the period during which it was fit for consumption but not necessarily nutritious. In 1894, Shindō Genkei, a pediatrician who strongly supported breastfeeding after exploring the differences in infant development and mortality between those solely breastfed and others who were raised on both cow's milk and breast milk, ranked condensed milk sixth and last out of six possible choices for babies. Maternal breast milk ranked first, followed by a wet nurse's milk, then donkey's milk, cow's milk, and goat's milk.[19]

By this time, many had developed technologies and products for dried milk, leading to the marketing of "infant formula," which contained high levels of sugar but despite looking like breast or cow's milk did not share most of their nutritional qualities. In 1855, T. S. Grimwade patented the technology for "dried instant milk powder."[20] Henri Nestlé produced "*farine lactée* Henri Nestlé," called "milk food" in Japan, which combined powdered milk, wheat flour, and sugar, and was marketed as "infant milk formula." Domestic powdered milk production for infants began in 1917, when Wakōdō, a baby product company founded by Hirota Tsukasa, the first professor of pediatric medicine at Tokyo Imperial University and the Shōwa emperor's pediatrician, produced Kinomeal. Four years later, Morinaga, a confectionary company that wanted to secure the ingredients for its caramels, which required condensed milk, developed a drum-shaped dehydrator to produce "dry milk" that became Doricōgen.[21] Meiji, another confectionary company, followed with Patrogen in 1923, developed by Suzuki Umetarō (1874–1943), the famed agricultural chemist known for his work on *kakké*/beriberi and his discovery of thiamine, or vitamin B1.[22]

Aside from commercially produced dried or condensed milk as alternatives to breast milk, readers may wonder about soy milk, made from the nutritious "wonder bean" that Jia-Chen Fu explored in her essay in this volume. Soybeans and soy-based products such as tofu, soy sauce, and miso paste were and are considered essentials to the Japanese kitchen, yet soy milk is not mentioned favorably in post-1868 texts. In fact, most of the time it is mentioned in discussion with nutrition and hygiene is after the first decade of the twentieth century in this particular context: the practice of contaminating cow's milk with it. Gotō Kakutarō, a medical doctor who examined military soldiers' *kakké*/beriberi through their diet, published a text on school hygiene in 1910 in which he admonished the male student for his lack of knowledge regarding everything from the

positioning of the desk and chair in the bedroom to drinking milk properly. Most important for the student was to develop discerning senses to evaluate the milk's color, smell, and texture to determine whether it was *real* milk, unlike the false beverage sold as milk.[23] Many others, like Gotō, were concerned by the increasing marketing of "false milk"—a profitable mixture of soy milk, sugar water, and flour, among other things, added to the milk, increasing the volume but lowering the overall milk content. Unsurprisingly, this tactic was popular, as there appeared to be an increased market for milk sales, and the police, which held the jurisdiction over milk distributions, explored diverse methods to calculate the percentage of soy milk tainting the cow's milk. As early as 1903, Takeuchi Shūzō and Iwata Yūgorō, instructors at the police academy, published a manual to teach their students how to test for food and beverage safety. While noting that soy milk was "not without its merit," and that "some prisons utilize it, mixed with milk or on its own," the authors recommend the use of a litmus paper to test for its freshness, and boiling and immediate cooling to test for starch.[24] In the context of "strengthening the nation," the language of nutrition was used to scrutinize the newly commercialized cow's milk, condensed milk, and variations of "infant formula," and shaped the discussion for the hierarchy of milks, raising the superiority of breast milk over any other alternatives.

Construction of Modern Motherhood and the Hierarchy of Milks

Plenty of men pushed for breastfeeding in Meiji Japan. From its first issue in 1885, *Jogaku zasshi* (Women's education), a women's magazine founded by men for the "enlightenment and education" of women, promoted the idea of "biological mothers" breastfeeding their own children. The magazine pushed its mostly socially and economically privileged women readers to assume increasing responsibility as modern educated mothers actively engaged in raising their own children; they were advised to reduce the role of nurses and maids in both nursing and nurturing infants. Using the new terms "biological mother" and "real mother," the magazine's writers defined a new role for women as breastfeeding mothers, carrying out "a serious duty for our country." If a mother *truly* loved her child, the magazine editorial explained, then she would be fully involved and not

leave her child to be raised by wet nurses and nursemaids.[25] The *Jogaku zasshi* editorial committee was not alone in its promotion of breast milk as opposed to alternative types of milk. Other publications, such as *Fujo shinbun* (Women's newspaper), chimed in. The editorials in these publications did not just rely on new discourses of citizenship and duty but also pointed to the biological suitability of a "real" mother's breast milk; for the health of the nation, newborns should not be raised by a wet nurse, much less on powdered or condensed milk. In its third issue, published in 1900, *Fujo shinbun* recommended that, if the biological mother was unable to nurse, she should use hygienic methods to sanitize the baby bottle and to water down cow's milk, completely bypassing the idea of a wet nurse altogether.[26]

Yet not everyone was convinced solely by the nutritional value of breastfeeding. Rather, the act was redefined in a new sociocultural and political context. Fukuzawa Yukichi, the prominent public intellectual, explained the significance of breastfeeding "as natural" in 1899. In his "The New Greater Learning for Women," Fukuzawa began by stating that "women are born equal to men," yet their health was more important than men's, for they must breastfeed, and "a mother should nourish her children with the milk from her own breasts." Criticizing the practice of hiring wet nurses "even when the mother has plenty of her own milk," and even the use of cow's milk, he declared that women who do not breastfeed are engaged in "an act of great indiscretion and it is an act against nature." Raising children belonged to the special domain of women, he argued, and even those who were wealthy or noble should follow "nature" and personally breastfeed their children.[27] Fukuzawa used the socioculturally and historically specific term "natural" here, essentializing biological kinship and the nuclear family unit rather than making class-based arguments of passing on personal characteristics or status-related traits.

Despite Fukuzawa's lack of direct engagement with nutrition, numerous translated texts from the United States, Germany, and Britain, as well as some domestic manuals, had appeared in the first decades of the Meiji period strongly advocating the view that the biological mother's milk was "nutritionally" best for the baby. These included, for instance, such translated American and Western European manuals as *The Maternal Management of Infancy: For the Use of Parents* (1873) by the American pediatrician Frank Horace Getchell, and *How I Managed My Children from Infancy to Marriage* (1876) by the British writer Eliza Warren Francis.

These translations contained forewords by major medical figures such as Matsumoto Ryōjun, the former personal physician to the last shogun and the first surgeon general, representing themselves in their official capacities within the new Meiji government, demonstrating to a certain extent the new regime's strong political support for such manuals. Certain new Japanese publications supported these views, such as the 1877 *Ikujisō* written by Takashima Yūkei, the former physician to the fourteenth Tokugawa shogun and the founder of a hospital with the imperial prince's physician, Imamura Ryōan. Powerful medical elites from all sides of the political spectrum seemed in agreement on this point. Discouraging the practice of employing wet nurses in elite families was no longer a matter of the supposed transmission of negative personal characteristics but instead was important because the biological mother's breast milk was considered nutritionally superior to that of a wet nurse.[28] Because the mother's milk was more nutritious, a mother's natural duty involved providing her breast milk to her child.

Yet certainly these arguments for the biological mother's breast milk did not immediately dominate and overturn earlier practices. Instead, it created a hierarchy of milks. While Takashima's 1877 manual incorporated new medical knowledge, and encouraged maternal breastfeeding for nutritional purposes, it also continued to recommend the use of laxatives (*makuri*) to expel fetal toxins, and followed Gyuzan's guidelines for selecting healthy wet nurses. There were other domestic manuals, such as *Danjo ikujihō* (1894), which downplayed the importance of maternal breast milk. Noting that breastfeeding could be left to the wet nurse, the anonymous author emphasized that the mother must be responsible for the actual raising of the child.[29] An 1883 manual containing the lectures of Erwin Baelz (1849–1913), the German physician to the Japanese Imperial family and professor at Tokyo Imperial University, began by outlining how to examine the quality of breast milk under a microscope to see the milk globules, immediately followed by strict guidelines on how to select the best wet nurse (strong bone structure, healthy complexion, perky nipples) if unable to obtain healthy breast milk from the mother, and ending with methods to use artificial products as a last resort.[30] By the last decade of the nineteenth century, what became clear in this manual and many others was the establishment of a hierarchy of baby milk, in which human milk, produced by a biological mother or, as an alternative, a wet nurse, was superior to that of animal milk or "artificial" nutrition, including condensed and powdered milk.

Mishima Michiyoshi and *Duties of a Mother* (1889)

In 1889, Mishima Michiyoshi, a pediatrician and school hygiene pioneer in the Ministry of Education, published a booklet manual, *Duties of a Mother* (*Haha no tsutome*), a popular publication that underwent numerous reprints into the early twentieth century. In it he opined that women who were angry or sad produced breast milk of poor quality and quantity, and that without a strict, regulated feeding schedule, a baby's character might be negatively affected. Fascinated by the statistical surveys on infant mortality in European countries that were meant to highlight a critical difference between a healthy and an unhealthy (and thus weak) citizenry, Mishima argued that healthy breast milk was the mother's moral responsibility. In his manual, he reproduced a German study focused on the impact of milk on infant mortality. The Munich Hygiene Office study showed that 15 percent of the infants who died between 1868 and 1870 were raised on human milk, whereas 85 percent had been fed with cow's milk or milk powder. Commenting on the low infant mortality rate (10 to 13 percent) reported for Sweden and Norway, where "all babies were raised on human milk," Mishima observed that human milk was "six times more effective" than cow milk or powdered milk, as was shown from the fact that breast milk–fed babies became sick less frequently than others.[31]

For Mishima, breast milk was not simply nutritional but also transmitted something more that formed the complete individual. Mishima argued that girls needed to be educated in schools for the purpose of fulfilling their mothering duty ("Way of the Mother") of properly raising children, as this formed the foundation for national strength. He blasted upper-class families for pampering their children too much with too many attentive nurses, creating useless "softies." In this manual, Mishima devoted the first five sections to discussing the different kinds of milk available for an infant's development. His order of preference was as follows: mother's milk, wet nurse's milk, raw (cow's) milk, condensed milk, and powdered milk. And he made clear that a key duty of the mother, in essence, was to manage the administration and scheduling of all types of milk, her own included. Mishima explained that breast milk was "a bluish-white liquid that is always alkaline, is easily digested within a baby's stomach, and again becomes part of his body and blood."[32]

Not for her sake, but as the conduit of breast milk, the mother must take great care with her body, diet, and emotional state. In particular,

Mishima held, women should eat ample amounts of rice with meat, poultry, or fish, as well as eggs, milk, butter, bread, noodles, dumplings, vegetables, meat or chicken soup, sugar, and desserts, with an emphasis on consuming starches believed to facilitate her flow of milk. He wrote, "In Germany, more than half of the women with infants are unable to breastfeed; but in Japan, there are very few who have no breast milk at all. This, according to Dr. [Erwin] Baelz, is due to the high consumption of starch, like rice, in Japan."[33] As Francesca Bray notes in her chapter in this volume, good rice, identified as "Japanese," was necessary for the production of Japanese breast milk by Japanese mothers. But, most importantly, Mishima wrote, one "must keep calm, and strive to be happy and exhilarated," then one will remain healthy and the baby will develop properly. Yet if one becomes emotionally angry or sad, then the repercussions to the breast milk are severe, as the "quality and quantity" of milk will change, and the nutritional value will decline, even becoming poisonous. The scientific and academic opinion to explain this phenomenon was lacking, Mishima admitted, but a mother's emotions, especially surprise, anger, and hate, would surely have, he ominously warned, deleterious consequences to the breast milk. He also emphasized that the first week after birth, as the critical first stage in life, had to be strictly regulated. Otherwise, one instance of irregularity might become the foundation for a lifetime of irregularities. So a baby should be breastfed every two hours, and in an emergency, one and a half hours was acceptable, but never in shorter intervals.[34]

To further buttress the nutritional value of breast milk in the milk hierarchy, Mishima critiqued the value of available alternatives—cow's milk, condensed milk, and "infant formula." Clarifying that not all cows produced "good milk," Mishima provided a long list of criteria for the production of safe, high-quality milk acceptable for infant consumption: the best milk came from free-range cows whose diet had large amounts of soybeans and high levels of nitrogen but absolutely no yams, beer, or other alcohol. Milks derived from cows milked in the evenings, he held, contained higher levels of casein (the main protein in milk) but lower levels of lactose, hence the method of diluting milk had to be adjusted to such specific conditions.[35] As for condensed milk, Mishima dismissed some of it as harmful, noting that the cheap versions caused "sores on the infant's face and mouth area, as well as . . . internal disorders." Claiming that condensed milk consisted of the leftovers of milk "with all of its good qualities

extracted," and with significant amounts of added sugar, he saw no point in even comparing it with either cow's milk or breast milk. While he maintained that condensed milk may be used after being watered down eighteen to twenty-two times, Mishima strongly believed that most of the condensed milk available in Japan was a fake import, produced from already spoiling milk, and so caused constipation and diarrhea in innocent infants.[36] Finally, Mishima specifically identified the "*farine lactée* Henri Nestlé," which he described as "yellow powder, including flour, egg yolks, condensed milk, and sugar." Despite its fame in Europe as "infant formula," Mishima concluded, its nutritional value was questionable, though not as harmful as other options, and could be served to children who were already weaned. Similar to European products made from wheat-based formulas, Mishima denounced other Japanese products made from rice powder and sugar, viewing them as lacking in nutrition but also causing indigestion in infants. Following on his damning reviews of condensed and powdered milk and setting out his highly specific criteria for the quality of cow's milk, Mishima concluded that nothing replaced the nutritional value of a mother's breast milk. Referencing an 1883 German medical report, Mishima painstakingly recapitulated his criticisms of alternative sources of milk for infants, and his conclusion that there was virtually no acceptable substitute for a mother's breast milk, provided at the proper intervals for proper infant development.[37]

Mishima's argument for a timely breastfeeding schedule was greatly influenced by social and medical trends in Western Europe and North America, as demonstrated in many of the translated texts and manuals available in Japan. Yet his beliefs also echoed the new ideologies and roles for women as mothers. The Meiji state's attempts to establish and control new modern patriarchal relations while pushing forward with the onslaught of importing ideas and institutions from the "West" could be encapsulated in this idealized concept: good wife, wise mother (*ryōsai kenbo*). While it had roots in versions of Confucianism, this notion was created to envision new women's roles—educated and equal partners to their husbands—in Japan.[38] Yet its meaning shifted and was reinterpreted to fit the changing social and political environments, and by the turn of the century, the idea of the "good wife, wise mother" evolved to clearly demarcate a gendered division of labor, as embodied here by breastfeeding. Similar constructions of motherhood based on breastfeeding occurred in the United States during its formative years. Historian Nora Doyle argued that

there was a shift in the notion of motherhood from mid-eighteenth- to mid-nineteenth-century America, when English and American writers began to claim breastfeeding as a maternal pleasure. This ideal dominated white middle-class ideas of womanhood and motherhood, supported by claims and warnings against "inhumane treatment of our tender little ones."[39] While "pleasure" was not a concept raised in any of the texts discussed here, the idea of responsibility was raised at every opportunity. The new ideals of Japanese motherhood included new and strict adherence to time, a modern phenomenon of scheduling the maternal body breastfeeding the baby. Years after Mishima's booklet, the high anxiety and stress levels in new mothers were almost palpable, as seen in a Japanese woman's letter to a women's magazine in 1907 about the *precise* duration she should continue to breastfeed.[40] She feared that if an indulgent mother caved in and provided breast milk every time the baby cried, that child would grow up into a sloppy, careless, greedy, and undisciplined person. A "good wife, wise mother" would not be so morally irresponsible as to raise such a child, who would not contribute to the new nation-state. Mothers and breast milk—the quality, the quantity, and the schedule in which it is provided—had, some argued, the potential to shape the character of the nation.

Breastfeeding and Social Surveys

Social surveys and public contests, both popular in early twentieth-century Japan, provided numerical data, obtained through unknown methodologies, for creative interpretations on the potentials for, and giving possible glimpses into the realities of, breastfeeding. These sample sets served both as justification for the superiority of breast milk by appearing to demonstrate a correlation between breast milk and the physical development of infants and children, and as examples of a more nuanced picture of what might have been actual practices. Hani Motoko, Japan's first female journalist and educator, wrote a manual for new mothers based on her personal experience but influenced by several existing works. Referencing Jean-Jacque Rousseau's *Émile, ou de l'éducation* (1762), in which he strongly supported biological mothers' breastfeeding their own for the moral and physical benefits to the children, Hani argued fervently for mothers breastfeeding. Most likely influenced by Mishima, she reproduced his hierarchy of milks and concluded that cow's,

condensed, and powdered milk were inherently inferior to the milk of a human mother. To further her point, Hani cited an unspecified survey in which the physical development of babies raised on cow's milk after one year (weight: 6,828 grams; height: 63 centimeters) was notably inferior to those raised on their biological mother's milk (weight: 7,910 grams; height: 69 centimeters).[41]

Advocates for breastfeeding began contests, correlating the physical size of babies with breast milk, such as the annual "baby exhibitions" launched by the prominent educator Nishiyama Testuji, to further this correlation. The first baby exhibition opened in Tokyo on September 7, 1913, at the Imperial Elementary School where Nishiyama was school principal. Over three hundred infants up to the age of two were entered in the inaugural contest, in which those ranked in the top twenty, evaluated on their weight, height, and overall health, were presented with awards. A child-rearing manual contained the recorded responses of award-winning babies' mothers, who were asked, "How did you raise your child successfully?" Their answers showed that only 3 of the 154 babies had ever consumed anything other than breast milk. The mothers proudly recounted their breastfeeding, and denounced the alternatives as lacking in nutrition.[42] By the mid-1920s, the surveys of "successful" mothers were reported widely in newspapers. In 1926, at the thirteenth annual baby exhibition, two hundred babies were evaluated for their health, height, and weight; eighty-six babies (twenty-six girls and sixty boys) received certificates and medals. In addition to the weight of the "winning" babies, the committee reported additional information about their parents, which was believed to be pertinent to the children's excellent development. The average age of the winning mothers was twenty-eight years and four months, while their average weight was thirteen *kan* (48.75 kilograms); two graduated from women's normal schools. Yet, above all, this committee's interest was in the mothers' breast milk. Mothers were asked which foods they thought produced the best breast milk; the largest number of respondents answered *mochi-udon* (rice cake and noodles; twenty-eight respondents). The summary of the mothers' responses concluded that these award-winning infants had not taken *makuri,* and were "raised solely on breast milk, not on powdered or condensed milk."[43] This was a widely promoted, visibly modeled demonstration of ideal practices revealing this powerful newly arising discourse from the late nineteenth century, linking the breastfeeding of a strong, healthy baby directly to the

maternal duty to the nation. Breast milk was to be a major contribution by mothers to modern Japan.

Yet, when others surveyed the children of Tokyo's social and political elite, the results showed a more complicated picture. Hirai Ikutarō (1865–1945), a student of Baelz and a pediatric professor at the Imperial Kyoto University, was a pioneering pediatrician who had long focused on the significance of breast milk, and since the turn of the century had used the new techniques of social surveys to gain a better understanding of the breastfeeding situation. He interviewed 198 mothers in 1911 who could no longer produce breast milk. How did these women cope? According to his respondents, twenty-nine employed wet nurses, seventy-four mothers used only nonhuman or "artificial" nutrition, and ninety-five used a combination of the two methods. Of the seventy-four mothers who used only nonhuman milk, fifty-seven used only cow's milk, while twelve used condensed milk, four used a mixture of flour and water kneaded into a paste, and one used parched rice.[44] Like many of these surveys, numerous other factors that would have provided a more thorough picture were missing—socioeconomic status, age, occupation, and how long these mothers had produced breast milk, if at all—but it became apparent that more than half of the mothers used both wet nurses and "nonhuman" milk, and more than a third used only "nonhuman" milk. This survey, even with its limitations, presents a more complicated picture of the ideal hierarchy of milk, with the dominant consumption of "nonhuman" milk.

Kurosu Ken, a pediatrician, examined students (grades one to five) at the exclusive Gakushūin (Peers' school) in Tokyo in 1928. Out of 216 students, 105 of them, or over 48 percent, he discovered, were raised solely on "nonhuman" milk.[45] However, similar studies in Tokyo's working-class neighborhoods in 1928 showed between 8 to 10 percent "nonhuman" milk use, and 80 to 90 percent exclusive feeding of breast milk. Surveys of working- and middle-class families in other cities, such as Osaka (1927), Sakai (1927), and Kurume (1929), demonstrated equally low percentages (about 10 percent) of "nonhuman" milk use.[46] While the surveys did not identify whether the "human" milk was that of the biological mother or another woman, clearly, there was an economic factor in the disparity of the Tokyo results, as the costs of purchasing "nonhuman" milk must have influenced the percentage of its consumption. Another possible factor might be the 1923 Kanto Earthquake and its aftermath, which may have caused new mothers uncertainties and stress, making them unable to produce breast

milk. Yoko McClain, a Japanese scholar and the granddaughter of one of Japan's celebrated authors, Natsume Sōseki, was born six months after the earthquake. Her mother was unable to produce breast milk, but since she did not take cow's milk well, her parents had to resort to hiring a wet nurse.[47] However, it appeared that McClain's family might have been in the minority, and other upper-class families relied on "nonhuman" milk.

This new reluctance to employ wet nurses and an increased reliance on "nonhuman" milk may have been influenced by social perceptions of the wet nurses as uneducated, but also by new concerns that their breast milk might be tainted. According to one recollection, the Meiji emperor's five consorts gave birth to fifteen babies, in hopes of fulfilling the newly established requirement for a male heir, but at least ten died with a then-common idiopathic disease with meningitis-like symptoms.[48] Hirai Ikutarō, the pediatric professor mentioned earlier, argued later, in 1923, that these infants suffered from severe lead poisoning, derived from cosmetic powder used by some Japanese women, which was applied liberally to the face, the nape, and the chests to make the skin appear whiter.[49] Until regulated in 1935, these products contained varying amounts of lead. An infant breastfed by a woman who used this powder could possibly suffer from lead poisoning through her tainted breast milk and also by inhaling the product through close physical contact. With such fears, a "good wife, wise mother" might have opted for commercially available "nonhuman" milk instead of trying to ascertain whether a potential wet nurse had ever used harmful cosmetics. The presumption of the safety of breast milk from wet nurses appeared to be in flux in Tokyo elite society by the 1920s, but the surveys demonstrated that working- and middle-class families relied less on commercially produced "nonhuman" milk and more on breastfeeding, although it is unclear whether it was a nutritional or financial choice.

Concluding Thoughts

Breast milk transmitted more than just "milk." Late Tokugawa medical experts believed that breast milk transferred status-based character traits and facilitated the expulsion of fetal poisons. Commercial milk products, whether fresh, condensed, or powdered, became readily available in Meiji Japan through foreign imports, and were later developed for domestic

production. Yet these new milk alternatives were perceived by government and medical experts and published manuals as nutritionally inferior to the biological mother's breast milk in the milk hierarchy. The moral imperative to be fully involved in the raising of one's children included the nutrition of the mother's breast milk, contributing to the health of the nation, as the baby contest and its celebration of larger (and breastfed) infants demonstrated. Yet new social surveys also showed regional and class-based variations in breastfeeding practices, where new concerns over the safety of breast milk from wet nurses may have led to increased usage of commercial "nonhuman" milks for certain Tokyo elites.

The nutritional science of breastfeeding reveals only part of the narrative, as the moral responsibility of new Japanese mothers was (and still is) intertwined with the modern method of child rearing. According to the experts, the first months of breastfeeding an infant were crucial, for they could "make or break" the child's future, depending on how the mother scheduled and administered the milk feeding. Harnessing breast milk as a nutritional ideology had the potential to empower women through its knowledge, application, and purpose, but it appears to have mostly constrained or eliminated earlier body practices, community structures, and knowledge systems that provided sustenance and support for newborns and themselves, and served to essentialize the gendered division of labor.

This focused look at Meiji and Taishō Japan certainly did not explore all aspects of the historicity of breast milk, and further studies are necessary to explore the remainder of the twentieth century—during Japan's war mobilization, defeat, and surrender, the American Occupation, and the postwar narrative of economic recovery. The creation of the Mother-Child handbook (*boshi techō*) during wartime mobilization, the medicalization of childbirth, and efforts by international organizations such as the World Health Organization, to name a few, add further elements in understanding the historical process of politicizing and moralizing breast milk. It is difficult, but not impossible, to also incorporate personal experiences and recollections through oral histories and ethnographic studies, which give vastly different insight into actual practices and mindsets.[50]

One recurring theme in both Meiji/Taishō and contemporary Japan is new mothers' anxiety about breast milk. In many textual accounts, the responsibility (and the blame) of a child's health was placed entirely upon the mother—her body, breasts, and mind. Historical sources, such as the popular "question and answer" sections in women's magazine forums

noted earlier, focus on the timing and quantity of breast milk, as well as its safety, illustrating the dynamics of women seeking the knowledge of "specialists" to inform them about how to properly breastfeed. And if that was not sufficient psychological pressure on a new mother, scholars such as Mishima argued that a mother's emotional state supposedly affected the nutritional quality of her milk. Breastfeeding, then, became a test of the mother's physical and psychological health and moral character. In the twenty-first century, the "moral" arguments for breastfeeding have only intensified. Proponents of breastfeeding point to its additional medical values, such as the transferal of bacterial immunity, as the moral responsibility of the mother to provide only the best for her newborn. Perhaps partly due to such pressures, there are also a number of studies indicating increased postpartum psychological depression experienced by new mothers in relation to the production of breast milk, although, ironically, breastfeeding is believed to ameliorate a mother's depressive state.[51] In Japan and elsewhere, some are desperate enough to purchase what was advertised as fresh "breast milk" via the Internet at extraordinary costs.[52] While twenty-first-century biomedicine may potentially uncover a greater understanding of its benefits, the persistence of such scientific inquiries demonstrates that defining and redefining the significance of breast milk is not a matter of the past.

Notes

1. Oyagaku, accessed April 1, 2017, www.oyagaku.org (now defunct).
2. Katō Mieko, *Nihon chusei no bosei to kegarekan* (Perspectives on motherhood and *kegare* in medieval Japan), (Tokyo: Hanawa shobo, 2012). For women's health issues in *Ishinpō,* see Lee Jen-der, "The Origins of Women's Disorders in *Ishinpo* and its Related Issues," in Clara Wing-chung Ho ed., *Overt and Covert Treasures: Essays on Sources for Chinese Women's History* (Hong Kong: The Chinese University Press, 2012).
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51. There is much scholarship on these issues. See, for example, Sandra Dunn et al., "The Relationship between Vulnerability Factors and Breastfeeding Outcome," *Journal of Obstetric, Gynecologic, and Neonatal Nursing* 35, no. 1 (January 2006): 87–97; and Christina Borra, Maria Iacovou, and Amnudena Sevilla, "New Evidence on Breastfeeding and Postpartum Depression: The Importance of Understanding Women's Intentions," *Maternal and Child Health Journal* 19, no. 4 (April 2015): 897–907.

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4 | Eating Well for Survival

Chinese Nutrition Experiments during World War II

Michael Shiyung Liu

War has an enormous impact on human health. Yet, despite all of the catastrophic effects of war, war has generally not been seen as an integral part of human well-being. In China during World War II, nutritional studies were promoted to improve the physical health of soldiers. These experiments on military nutrition were meant to carry out an old dream—"Rich State and Strong Soldiers" (*fuguo qiangbing*). The dream had two parts: to apply modern nutritional knowledge to win the war and to build the foundation for a stronger state with a healthy population. Discussion on state building and dietary habits has recently become fashionable in the fields of cultural history and sociology. Bryan Turner once revolutionized the way in which we think about our bodies under governmentality. He later extended the argument to the relationship between the political order and the socialized body.[1] Similar works have been done in East Asia. In *Modern Japanese Cuisine: Food, Power, and National Identity,* Katarzyna Cwiertka treats a number of cases in which modernity is measured in food in Japan. She argues that the strength of the Japanese Empire was epitomized by the diets and specific foods prescribed by officials.[2] Mark Swislocki's *Culinary Nostalgia: Regional Food Culture and the Urban Experience in Shanghai* links Shanghainese to their city, to other parts of China, and to the wider world through food.[3] Inspired by previous studies on the relationship between food and self-identity, this chapter adds to this research by considering how improving nutrition would lead to healthier soldiers and a stronger state.

The relationship between diet and health has fascinated Western researchers since the late nineteenth century. The knowledge of dietary studies was used to improve the health of soldiers during World War I. During World War II, the US Army conducted nutritional studies for their soldiers fighting in "all four corners of the world."[4] To these American military scientists, adequate diet was as vital to soldiers as proper weapons. Although China applied modern nutritional knowledge in its military prior to the outbreak of World War II, the emergency demand for stronger soldiers at the front soon became a high priority for Chinese defense policy during 1940–1945. The American military ration was introduced as a nutritional supplement to the poor diet provided to Chinese troops. The common idea that "you are what you eat" was behind this action.[5] However, experiments by Chinese military surgeons suggested that Western food could not be easily digested by the Chinese, who had smaller physiques than Westerners. In addition, China could not distribute American military rations to all of the Chinese soldiers needing additional nutrition. The Chinese military thus could not meet Western nutritional standards. Debates among nutritionists ranged from a strong focus on digestive physiology and nutritional science to culinary habits and even debates on the "fitness" of the Chinese physique. As Chinese surgeons conducted more research, an argument on the Chinese physique seemed to replace the American emphasis on the stronger and bigger physical figures. This chapter demonstrates that the nutritional debate in China during 1940–1945 was a complicated process of negotiation between Chinese dietary tradition, socioeconomic hardship, and Western biomedical criteria in building a modern state and a healthy Chinese body.

Unsettled Nutritional Studies in Prewar China

Modern dietary studies in China were primarily conducted at Western-funded or -influenced universities.[6] Finding nutrients (*yingyang su*) was one of the early research goals of investigations into the Chinese diet. As early as in 1913, when William H. Adolph of Cheelo (Qilu) University published "Diet Studies in Shantung"[7] and "A Study of North China Dietaries" (1925),[8] researchers in North China such as Wu Xian (Wu Hsien) and Daisy Yen Wu of Peking Union Medical College (PUMC) mainly focused on dietary components in villages outside of Peking,[9] and

usually emphasized nutrients such as protein, fat, carbohydrates, and fiber, and their digestion in the human body.[10] These and later experiments on Chinese diet and digestion tried to generate a fundamental contribution to nutritional science in China with the goals of improving the Chinese physique and building a "modern" state.

During the 1930s, Chinese vitamin studies reflected the idea that healthier and better nutrients would improve the Chinese physique. This work included establishing research institutes for nutritional science and promoting nutritional education as well as publishing nutritional standards for the Chinese population. In 1938, the government-organized Committee on Nutrition set the standards for a nutritional diet for the Chinese people.[11] The 1938 research project "Minimum Nutritional Requirements for Chinese" (*Zhongguo minzhong zuidi yingyang xuyao*) also listed daily required nutrients such as protein, fiber, fat, and vitamins. However, the author of the report admitted that no reliable information about vitamins in the Chinese diet was available at that time.[12] The study of vitamins both in the West and in China began to flourish only in the 1930s when Paul Karrer elucidated the correct structure of vitamin A.[13] In major cities such as Shanghai, surveys paid much attention to the nutritional demands of urban industrial populations.[14] In 1931, the Institute of Chemistry of Academia Sinica completed an investigation of the Shanghai daily diet. According to the report, the main food staples of Shanghai residents lacked sufficient proteins for muscle repair and fats for energy, yet both were required for healthy workers in an industrial economy.[15] The report also stated that the situation could be worse for the middle and upper classes in the cities, as they favored refined rice that could cause beriberi.[16] In addition, a cooperative project between the Shanghai municipal government and the newly established Henry Lester Institute for Medical Research experimented to improve the nutrition of child workers in order to prevent adult beriberi.[17]

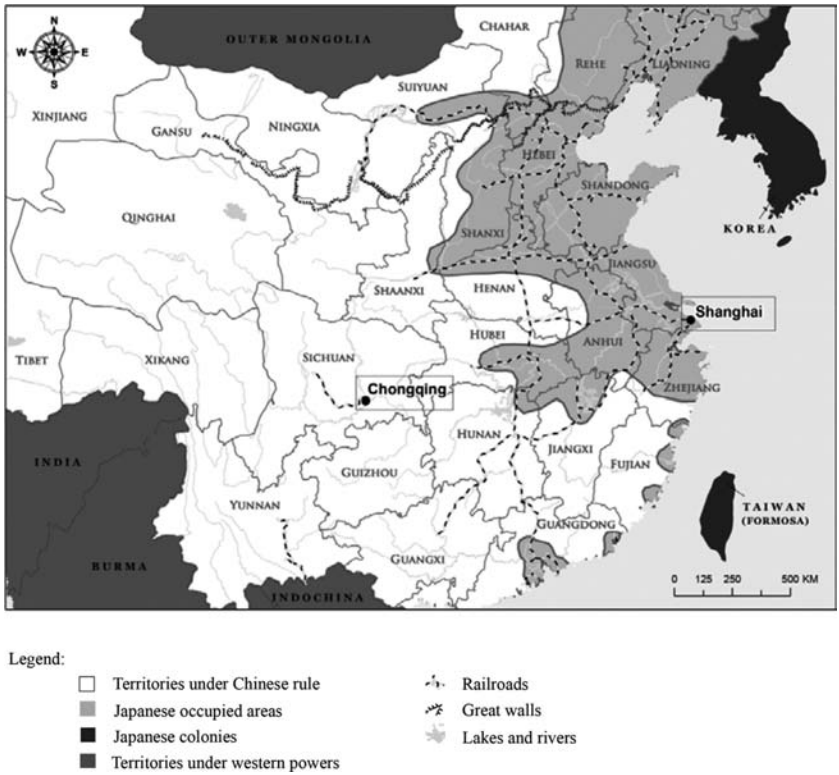
Between 1925 and 1937, nutritional studies were eventually identified as an applied science to promote healthier workers and, hence, a stronger modern industrial state.[18] China could not afford to slow its economic progress because its workers suffered from malnutrition. At the Lester Institute, Dr. Hou Xiangchuan and his team worked to identify the amount of vitamins in the Chinese diet and to prove the link between certain illnesses and vitamin deficiency.[19] Based on the research by Hou Xiangchuan, Wu Xian, and others, the China Medical Association suggested using the findings in the 1938 project as a basis for the first official "minimum nutritional requirement for

China" published in 1939. Several significant changes from the 1938 research report should be mentioned here. The bulletin "Physiological Bases of Nutrition" by the League of Nations in 1936 helped set the minimum requirements of nutrition for Chinese.[20] The nutritional requirements for Chinese were determined by gender, season, occupation, and age, and took into consideration Chinese socioeconomic conditions, the nature of Chinese diets, and the average lighter body weight of the Chinese compared to Westerners.[21] Finally, vitamins were treated as equal to other nutrients, and the report stated that "to ensure adequate nutrition, at least 25 percent of the caloric intake should be met with foods rich in vitamins."[22]

All these surveys and nutrition proposals for Chinese during the late 1930s virtually overlooked the 90 percent of the population in rural areas that suffered constant malnutrition and even starvation. Moreover, these nutritional studies also could not substantially improve the poor diet of lower-class urban workers in China if the governments took no action. As Angela Leung's chapter in this volume indicates, nutritional scientists in China were convinced that in the 1930s, at the outbreak of the war, Chinese peasants constituting 80 percent of the population were already undernourished, with insufficient intake of animal proteins; the war obviously made the situation much worse. Moreover, the Japanese occupation of industrial urban areas along coastal China (map 4.1) further stifled nutritional studies in these areas. With the migration of research institutes and teams to the southwestern border, the goal of the strong soldier began to dominate nutritional studies in China.

Nutritional Research for Strong Soldiers in Wartime China

When the nationalist government decamped to Chongqing in 1937, many official bureaus, private companies, and universities also moved their operations to China's southwest. In September 1938, as the Japanese army invaded, a team of refugee students and faculty from Shanghai's St. John's University fled to Kunming, capital of Yunnan Province in southwest China. Among them was Hou Xiangchuan, a laboratory scientist at Henry Lester Institute, a newly founded research institute in the 1930s that carried out various nutritional studies.[23] This move by Hou Xiangchuan and his research team meant that the first generation of Chinese nutrition scientists became involved in war preparations on China's southwest border.



Map 4.1 Map of China in the 1940s showing Japanese-occupied areas. Source: GIS Center, Academia Sinica, Taipei, Taiwan.
Note: The Japanese-occupied areas are shown in gray, while Shanghai (in the East) and Chongqing (the wartime capital of Republican government in the Southwest) are both marked with a rectangle.

To Hou and other Chinese intellectuals, the road to Kunming was not lonely. Between 1937 and 1945, Kunming became the intellectual center of wartime China. In 1938, three of China's most prominent universities—Peking, Tsinghua, and Nankai—jointly established the Southwest National United University, or Lianda, in Kunming. Many studies have discussed the migration of Chinese intellectuals and its impact on the development of Western science in wartime and post-World War II China,[24] among which Jia-Chen Fu's works are essential to understanding the wartime situation of nutritional studies by these refugee scholars. According to Fu, by 1942 the Shanghai Refugee Children Nutritional Aid Committee, formed in 1937, which sought to improve refugee children's nutritional health, had created a national network through the Chinese Nutritional

Aid Council, with governmental offices and nutrition clinics in Chongqing, Chengdu, Guiyang, and Kunming. Fu argues that in linking biomedical understandings of nutrition with social change, this group of Western-trained physicians and young female social workers enacted a new kind of social activism, which seized upon the "food-as-fuel" idea and believed that the welfare of the nation depended on the nutritional health of its citizenry. The Chinese Nutritional Aid Committee articulated an image of professional and specialized expertise in the science of nutrition and care.[25] This chapter, examining the wartime nutritional work with military personnel, complements her comprehensive discussion of refugee children and civilians.

At the eastern end of the Burma Road,[26] a supply route crossing the Allied China-Burma-India military theater, Kunming hosted several foreign aid organizations,[27] including the China Medical Board (CMB) of the Rockefeller Foundation and the American Bureau for Medical Aid to China (ABMAC), which contributed medical aid to the Nationalist cause[28]: foreigners and Chinese worked together to improve the military diet of soldiers.

The First Survey of Military Diet

For the Americans, the goal of building stronger Chinese soldiers seemed easy: just provide more and better army provisions to China. Walter S. Jones, an American surgeon, stated in a report that medical aid to China during World War II took many forms, including the distribution of large quantities of medical supplies and equipment, the training of medical officers and troops, and the deployment of American medical units with the Chinese army in battle. To help coordinate the Chinese-American medical system, the combat US liaison officer system was extended to medical service, including laboratory work. However, the American liaison office soon complained about the lack of cooperation from the Chinese side. One problem was the lack of nutritional information about the diets of the Chinese soldiers. Without packed military provisions, the Chinese army usually cooked with local ingredients, the nutritional components of which had never been properly analyzed. Finally, Chinese also criticized the taste of American military rations.[29] To ease these difficulties, several organizations were established to find solutions.

The Army Health and Nutrition Survey, proposed by American consultants, assessed the health and nutritional status of soldiers and military staff in China through a series of studies designed to measure the diet of Chinese soldiers by American nutrition standards.[30] The survey was unique in combining interviews with physical examinations to generate vital health statistics for the state and the military. The survey began in the early 1940s in Yunnan and later conducted a series of experiments focusing on different groups of armed personnel and civilian officials.[31] An analysis of this research, "The Nutritional Studies of Chinese Troops" (*Zhongguo jundui zhi yingyang yanjiu*), focused on health and nutrition measurements to meet the needs of joint operations among the Allies. The survey's interviews included demographic, socioeconomic, dietary, and health-related questions.[32] The experimental component consisted of medical, dental, and physiological measurements as well as laboratory tests administered by medical personnel, most of whom were army surgeons under the supervision of experienced nutrition scientists.

According to the research, severe malnutrition was common in the Chinese army and caused diseases such as night blindness and edema of the legs,[33] which reduced the fighting ability of the Chinese army. In the early 1930s at the beginning of modern nutrition studies, some Chinese scientists criticized the low quality of the Chinese diet and encouraged people to eat Western food in order to acquire nutrients.[34] As American aid arrived and Chinese leaders demanded stronger soldiers, some medical scientists, with the support of the Nationalist government,[35] conducted several nutritional experiments under the difficult socioeconomic situations in Yunnan.[36] To these researchers, the survey provided important information for calculating proper nutritional intake for soldiers and military staff on the front and even in the rear areas.[37] The propaganda slogan "In order to reach the first priority of supporting soldiers, we must first provide them with nutrition" (*yangbing diyi, yingyang diyi*)[38] was transformed into a policy of building a modern army for Chinese-American joint military actions.

Malnutrition also caused anemia among Chinese soldiers, who had two main forms: iron-deficiency anemia and pernicious anemia.[39] The former was thought to be adequately treated by preparations of iron, and the main goal was to find sufficient supplies of iron supplements from imported medications and from better diets made with local culinary ingredients.[40] Poor diet and malnutrition became an emergency when general Joseph W. Stilwell

decided to fight in the China-Burma-India military theater. Finding better military dietary provisions to boost the strength of Chinese soldiers therefore became the aim of nutritional experiments during the war.

The "Malnutrition" of American Provisions to Chinese Soldiers

China was in fact only a small part of the entire American war effort in the Far East and the Pacific in the early 1940s, yet American military aid, including medical supplies to the desperate Chinese military, was very important.[41] Although some Chinese troops received food from American resources because they were under Stilwell's command in the China-Burma-India theater,[42] most of the Chinese army lacked American supplies and suffered from both hunger and a poor-quality diet.[43] General Stilwell—usually backed by the War Department—believed aircraft and supply via "the Hump" across the Himalaya Mountains[44] failed to use the more plentiful ground forces in India and China. Thus, Stilwell sought to bring about long-term improvement of China's own military strength.[45] Stilwell's medical consultant, Robert K. S. Lim,[46] a Singaporean Chinese who was chief deputy of the Bureau of Military Surgeons and former dean of Physiology at PUMC, strongly supported these ideas.

However, finding solutions was not as easy as Stilwell and Lim had expected. China's chronic poverty, deepened by the long years of war,[47] its complex and uncertain political structure, and the Nationalists' fears of what the future might bring from the Communist enclave in the north all argued strongly against the forceful levying of grain to implement a costly nutritional improvement for the Chinese military. Stilwell and Lim both believed that properly trained and led Chinese troops, liberally supplied by the Americans and backed with a stable and nutritional food supply, could both fight a war as well as establish a firm foundation for postwar growth and reconstruction. Robert Lim and his colleagues at PUMC, who established a research group on nutrition at the School of Emergency Medical Training in Guiyang, Guizhou Province, advocated similar concepts.[48] Unlike the Central School of Military Surgeons (Zhongyang junyi xuexiao, CSMS), Robert Lim's School also favored preserving manpower for postwar public health reconstruction.[49] This effort later fused nutritional studies in the prewar period with wartime experiments.

In late 1941 Stilwell and Lim were concerned with how to improve the physical strength of Chinese soldiers for cooperation with American soldiers in the rescue mission to Burma planned for 1942.[50] Additionally, China-Burma-India theater surgeon colonel Robert P. Williams was ordered to organize the Chinese Medical Service (CMS) to supply medicines to China, particularly to prepare for fighting and the rescue mission of British soldiers in the China-Burma-India Theater.[51] After the military expedition to rescue British troops in Burma in 1942, a report to CMS from Chinese military surgeons who had returned from Burma showed that approximately one month after their withdrawal from Burma, thirty-four cases of vitamin B complex deficiency had been admitted to the hospital, including seven cases from the 14th Brigade suffering from multiple neuritis.[52] CMS noticed that the neuritis among Chinese soldiers did not develop until almost one month after the substitution of "Compo" rations.[53] However, according to one source, it was difficult to assess whether the indications of malnutrition in these personnel of the 14th Brigade were due to complications arising from malaria or were the result of postdiphtheritic ulcerations. In the other brigades, another report writer noticed that the symptomatology showed greater variety,[54] including five cases with a history of malaria, and six that had suffered from dysentery.[55] Both diseases were pervasive among Chinese troops, and both Chinese and American surgeons believed such physical suffering could trigger various mental problems.[56] Only in the 1960s did American surgeons start to realize that these manifestations were caused by the depletion of bodily reserves of vitamin B1 during a lengthy period of subsisting on K rations.[57] However, until they received more Chinese and British cases from Burma, the Chinese officers of CMS believed the cause of depression was malnutrition.

Malnutrition cases appeared more frequently after the evacuation from Burma, and became severe in China. CMS believed this occurred because the 77th and 111th Brigades had subsisted almost entirely on K rations, and that the K rations issued during their march could not replace the body reserves of vitamin B complex that they had depleted in Burma. Avitaminosis, a contemporary pathological term used to describe the general symptoms of nutritional deficit, sporadically appeared in the CMS reports. Despite the symptoms of avitaminosis spotted in the surgeons' clinical observations on the frontline, and later at the rear, in the beginning CMS seemed confident in the effectiveness of K rations. They declared that several illnesses, such as postmalarial complications, postdiphtheritic

paralysis, and failure of intestinal absorption after dysentery or gastroenteritis, were also prevalent among soldiers and could be the etiological factors causing avitaminosis. CMS therefore believed that the nutritional effectiveness of K rations should be sufficient to cure avitaminosis if the whole package was taken properly and fully digested by soldiers who did not suffer from the above-named diseases.[58]

Although the discovery of these cases of avitaminosis would seem to indicate that the vitamin content of the K ration was deficient, the American surgeons disagreed. They also blamed the high morbidity rate in Chinese troops on "bad" eating habits. They argued that the Chinese soldiers refused to eat such parts of the ration as evaporated milk, cheese spread, and cocoa powder, which contained many vitamins.[59] All of the nutrients of these dairy products accounted for nearly 27 percent of all the nutrition in a pack of K ration.[60] However, later, when American and British soldiers suffered from severe depression and other physical problems, the K ration was not criticized for its performance in the theater of operations, even though difficulties in obtaining supplies from the bases in India had resulted in the widespread and monotonous use of K rations by American light infantry forces as well as by troops from Nationalist China and the United Kingdom.[61] The number of avitaminosis cases grew continuously for months after the soldiers withdrew to China. The deterioration became obvious in American and British soldiers, while Chinese troops also suffered but rarely reported severe cases. The dilemma forced military surgeons in China to deal with alternative causes of malnutrition in Chinese soldiers. Under the premise that American rations should provide sufficient nutrition, they had to think beyond regular biomedical reasons. Later on, perspectives of the local environment, differences in physique, and Chinese traditional dietary habits were all taken into consideration.

Adjustment and Compromise

Despite the confidence of both the Americans and the Chinese in American military supplies, including weapons and rations,[62] CMS's report caught the attention of the Nationalist government as well as several foreign medical aid agencies of the United China Relief, including the American Bureau for Medical Aid to China, a civilian institution in Chongqing. To resolve the debate between the Chinese and the Americans

on the dietary needs of Chinese soldiers, a series of experiments was designed. According to the theory, in wartime China, both industrial workers and soldiers required sufficient calories as well as sufficient protein to enable muscle repair. Thus, the nutritional intake necessary for healthy industrial workers should also be the standard in order to build stronger soldiers during wartime.[63] Because people such as Robert Lim believed that wartime construction would also serve postwar reconstruction, the nutritional requirements of both soldiers and workers became central to the research during the war.

Inspired by the progress of nutrition studies in the US Army and practical needs in China, attention to nutritional experiments first involved formulating a military food policy in wartime China to satisfy the several dietary improvements that had been recommended by various Western and Chinese scientists before the outbreak of World War II.[64] The diet of Chinese soldiers was soon under evaluation and linked to American standards of nutrition for soldiers. Army nutrition scientist Wan Xin and colleagues in 1942 generated a series of investigations of the Chinese military diet, thus revealing its nutrient and vitamin components.[65] One of the goals of the investigation was to use knowledge of workers' diets to understand the nutritional needs of soldiers.[66] Another goal was to modify American rations in order to produce similar rations from traditional Chinese food, which hopefully could more effectively meet Chinese dietary needs.[67] All of these goals were very reasonable from the viewpoint of science, but they might have overlooked China's socioeconomic difficulties. In 1942, the Nationalist government had already lost numerous agricultural provinces—as well as major industrial cities such as Shanghai—to Japanese occupation. All of the investigations of local diets in eastern and northern China during the 1930s did not correspond to the very difficult situation in remote southwest China, the poorer home base of the Nationalist government and General Stilwell's troops. Chinese researchers had to work on their own and seek nutrition in local dietary ingredients, thus taking the wartime reality into account.

The Army Institute of Nutrition (Lujun yingyang yanjiusuo, AIN) at CSMS was the primary Chinese organization in charge of nutritional research on soldiers.[68] From 1943 onward, AIN conducted periodic dietary experiments to investigate the nutritional value of the military diet and to assess the nutritional value of various dietary ingredients. Inspired by foreign combat diets, Li Tingan—a PUMC graduate, former director of

Shanghai Municipal Bureau of Public Health, and later, in 1947 the superintendent of the Central Hospital in Canton[69]—proposed the production of "special biscuits" (*tezhong binggan*) for the nutritional needs of Chinese soldiers, a concept that could have been inspired by American military rations. In his article, Li attached a table of the nutrients the biscuits should include, such as protein, calcium, phosphorus, and vitamins A and B derived from beef, pork, lamb, egg whites and yolks, rice bran, bean powder, vegetable oil, bone powder, and salt,[70] but he made the quantities less than those in the American rations. Li had explained that the physique and digestive ability of Chinese soldiers were weaker than those of Westerners; the smaller Chinese body could have been an evolutionary consequence of a long history of food scarcity in China. He thus asserted that, due to the small body of the Chinese, the daily requirement of nutrients and vitamins for Chinese soldiers could be lower than the international standards for Westerners. For example, a Chinese person would require only 2,400 calories per day, compared to the 3,400 calories of the international standard; 30 grams of fat per day instead of the international standard's 50 grams; and 660 grams of carbohydrates per day compared to the international standard of 800 grams. Only the 80 grams of proteins per day in Li's article matched the international standard.[71] Although soldiers would need more energy on the battlefield, Li's report suggested that the Western standards of nutrition prevailing in prewar years might be too idealistic for wartime China. It seemed the small Chinese physique would "naturally" require smaller quantities of food and less nutritional intake. Such a statement solved the dilemma facing CMS and relieved pressure on the Nationalist government, which was struggling to feed its troops.

The Chinese scientists mainly from AIN conducted several detailed surveys and experiments in which the food was weighed and measured and the diet of soldiers estimated. The analyses worked out the amount of calories, protein, calcium, iron, vitamin A, vitamin B, riboflavin, nicotinic acid, and vitamin C consumed.[72] During 1944, AIN also investigated the hemoglobin (HbA1c) content of soldiers' blood.[73] Hemoglobin was chosen as the main criterion for nutritional research in wartime China because of its simplicity,[74] and because any serious long-continued deficiency of iron or protein would be reflected in diminished HbA1c values (i.e., in anemia). All observers used the Haldane-Gowers method, which had recently been standardized by the British Standards Institution.[75] The figures recorded in the study showed much lower HbA1c levels than those obtained in

American soldiers, and were even lower than the figures obtained in America during the depression in the 1930s. The researchers attributed the difference in part to the fact that the Chinese soldiers were largely recruited from poor peasants or other lower-income groups.[76] The Chinese researchers were aware that the major reason behind the different nutritional intakes between the Chinese and American soldiers was economic, but they could not solve the problems during the war. Thus, the research on the wartime nutrition of Chinese soldiers had to be saved for the post-World War II reconstruction,[77] a goal that the Nationalist government could not achieve before its retreat to Taiwan in 1949.

In a 1944 article, the physician Zhou Fengjing encouraged the government to develop nutritional diets for Chinese considering the "Chinese physique" (*Zhongguoren de tizhi*) and "economic possibilities" (*jingji keneng*).[78] Wan Xin's 1942 report had already encouraged adjusting the nutrient requirements for Chinese due to their small physiques.[79] However, the definition of "Chinese physique" could sometimes be arbitrary, as shown by Hilary Smith's argument concerning good and bad bodies in this book. As the war in China was prolonged, it became difficult to obtain food, and for economic reasons compromises had to be made that lowered the Chinese standards of nutrition intake.

Because of budget cuts and inflation, in 1942, Chinese army surgeon Wang Zhaozhang of AIN suggested a compromise in the military diet by obtaining nutrients from local food and encouraging soldiers to grow vegetables and raise pigs and chickens to supplement food and animal proteins.[80] Wang Zhaozhang's view presumed that the digestive system of the Chinese body had adapted over thousands of years to a vegetarian diet, not only because grains and vegetables were traditionally preferred foods, as described in Angela Leung's chapter in this volume, but also a result of chronic famines and wars. Based on investigations of nutrients, army official Chen Liang suggested substituting soybeans for animal protein.[81] Nutrition scientists such as Jin Baoshan, director of the National Health Administration,[82] and Army physiologist Chen Meiyu[83] of AIN made similar suggestions. Research between 1942 and 1945 also sought to find local nutritional sources for the majority of Chinese troops on the front line in central China. These troops did not join the military expedition under Stilwell's command, and received almost no American supplies, including military rations; for their food supply they had to be self-sufficient. However, to scientists such as Jin Baoshan and Chen Meiyu, the lack of a

stable and nutritional food supply should not mean sacrificing the health of soldiers or their fighting strength. Local grains and vegetables were therefore analyzed for their nutrition. Based on the assumption that vegetable proteins were easily digested by Chinese, the soybean was seen as the "fittest" replacement for animal proteins in "Western meals." Meanwhile, eating grains became a symbol of being patriotic, while consuming refined rice was criticized for both economic reasons and for being unpatriotic.[84] It is interesting to note that Jia-Chen Fu's chapter in this volume shows the possibility of linking the wartime diet to the long history of soybean consumption in China. Both the vegetarian diet and soybean consumption had indeed been central in Chinese culinary culture historically. Because of the wartime hardship, traditional cooking with many vegetables and soybeans was promoted for the "fitness" of the Chinese physique and for economic considerations.

It is worth noting that the suggestion by Jin Baoshan and Robert Lim to find local sources for the nutrition of soldiers was adopted by the Nationalist government to set new standards for the minimum nutrition intake of civilians as well. Thus, both troops and civilians were encouraged to grow their own vegetables for sufficient nutrition with a "familiar taste."[85] We have no information regarding whether these new Chinese formulas were adopted by American experts in China. The research of Chinese scientists should, however, be seen as part of the "research and development" of modern military science when food consumption became aligned with the patriotic obligation to build a "rich state and strong soldiers."

Due to cooperation with the United States, nutritional studies were promoted by the Chinese army beginning in 1942. The cooperation between China and the United States introduced modern nutritional knowledge into China and merged military nutritional studies with previous civilian studies from before the war. These efforts contributed to the continuation of nutritional studies after the war as well, when the two issues of "Chinese physique" and "economic possibility" remained prominent.

Concluding Remarks

Chinese nutritional studies began before the outbreak of the Sino-Japanese War (1937–1945), soon after Western studies of vitamins began,[86] at a time when the majority of the Chinese population suffered from malnutrition.

Most pre–World War II nutritional experiments laid much concern on improving Chinese dietary intakes. This prewar research confirmed the old saying "You are what you eat." To these prewar Chinese scientists, modernization of the diet would compensate for centuries of physical weakness. This would, in turn, transform Chinese society and economy. The war between China and Japan further exacerbated the political unrest and economic chaos in China and the economic situation deteriorated very quickly. The authorities needed stronger soldiers for defense, but they also lacked the ability to feed their soldiers and civilians. The American supply of rations was helpful but could not support the whole Chinese army. The Nationalist government needed ways to lift the morale of Chinese soldiers who lacked sufficient food.

In his new book, John Watt claims that the Kuomintang (the Nationalist Party, or KMT) did not provide adequate nutrition or health care for its conscript armies or for its civilians.[87] However, as mentioned above, surveys by CMS and AIN used Chinese soldiers as test subjects for American military-dietary research and to explore whether the nutritional needs of Chinese differed from those of Western people. The debate over the effectiveness of applying American K rations to Chinese soldiers and further studies by AIN revealed that the KMT did make efforts to alleviate malnutrition among soldiers. These efforts also brought renewed emphasis to prewar ideas of a healthy vegetarian diet and soybean consumption. Owing to the small "Chinese physique," the dietary consumption of Chinese could be less than for Westerners. The transforming focus of wartime nutritional studies seemed to change the argument from "You are what you eat" to "You eat what you are." As the Chinese physique required less food and a lower quantity of nutrients than the American, the government's burden to feed its people and soldiers was reduced. With such a viewpoint, a final victory was possible despite scarce resources.

Notes

1. Bryan S. Turner, "The Government of the Body: Medical Regimens and the Rationalization of Diet," *British Journal of Sociology* 33, no. 2 (1982): 254–269; Bryan S. Turner, *The Body and Society: Explorations in Social Theory* (London: Sage Publishing, 2008).

2. Katarzyna Cwiertka, *Modern Japanese Cuisine: Food, Power and National Identity* (London: Reaktion Books, 2006).

3. Mark Swislocki, *Culinary Nostalgia: Regional Food Culture and the Urban Experience in Shanghai* (Stanford, CA: Stanford University Press, 2009).

4. Rohland A. Isker, "Dairy Products in the Army Ration," *Military Surgeon* 97 (1945): 277.

5. Albert Field, "Medical Officer in China," *Military Surgeon* 103, no. 4 (1948): 295–296.

6. Zhongguo Yingyang Xuehui (Chinese Nutrition Society), ed., *Zhongguo yingyang xuehuishi* (A history of Chinese Nutrition Society), (Shanghai: Shanghai Jiaotung University Press, 2008), 3–6.

7. William H. Adolph, "Diet Studies in Shantung," *China Medical Journal* 37 (1923): 1013.

8. William H. Adolph, "A Study of North China Dietaries," *Journal of Home Economics* 17, no. 1 (1925): 1.

9. Wu Hsien and Daisy Yen Wu, "Studies of Dietaries in Peking," *Chinese Journal of Physiology Report Series,* no. 1 (1928): 135.

10. Zheng Ji, "Zhongguo yingyangxue sanshi nian (1920–1950)" (Three decades of Chinese nutritional studies [1920–1950]), originally published in supplement to *Kexue* (Science) 32 (1951); reprinted in Zheng Ji, *Zheng Ji kexue wenxuan* (Select scientific work by Zheng Ji) (Nanjing, China: Nanjing daxue chubanshe, 1993), 73–95.

11. Committee on Nutrition, "Committee on Nutrition: Minimum Nutritional Requirement for China." *Nutrition Notes* 10 (1938): 301.

12. Zheng Ji, "Zhongguo minzhong zuidi xiandu yingyang xuyao zhi kuanjian" (An opinion on the minimum requirement of Chinese nutritional intake), *Zhonghua yixuehui zazhi* (Journal of the Chinese Medical Association) 27, no. 5 (1941): 276.

13. On the study of vitamins, see Rohland A. Isker, "Developments in the Field of Vitamins," *Cellular and Molecular Life Sciences* 26, no. 3 (1970): 225–240. On Paul Karrer's elucidation of the correct structure of vitamin A, see Zhongguo yingyang xuehui, *Zhongguo yingyang xuehuishi,* 3–6.

14. For example, Zhu Zhangjun, "Shanghairen zhi shanshi" (The diet of Shanghai residents), *Kexue* 18, no. 9 (1934): 1174–1192.

15. John Komlos, "Nutrition, Population Growth, and the Industrial Revolution in England," *Social Science History* 14, no. 1 (1990): 81.

16. Zhu Zhangjun, "Shanghairen zhi shanshi," 1191–1192.

17. Anonymous, "Shanghai gongbuju shiyan gailiang tonggong shanshi" (Shanghai Municipal Council experiments on improvement to child workers' diet), *Zhonghua yixue zazhi* (*JCMA*) (Shanghai) 23, no. 1–2 (1937): 395.

18. Kenneth J. Carpenter, "A Short History of Nutritional Science: Part 1 (1785–1885)," *Journal of Nutrition* 133, no. 3 (2003): 641–642; and Kenneth J. Carpenter, "A Short History of Nutritional Science: Part 2 (1885–1912)," *Journal of Nutrition* 133, no. 4 (2003): 975–977.

19. Hou Xianchuan published a great deal of research on these topics, such as Hou Xianchuan, trans., "The Physiology of Nutrition" (Yingyang zhi shengli jichu), *JCMA* (Shanghai) 22, no. 4 (1936): 251–259; and "Food and Nutrition" (Shiwu yu yingyang), *Wenzai* 1, no. 1 (1937): 128–129.

20. The League of Nations, ed., "Physiological Bases of Nutrition," *Quarterly Bulletin of the Health Organization* 5 (1936): 391.

21. Committee on Nutrition, "Committee on Nutrition," 303–304.

22. Committee on Nutrition, "Committee on Nutrition," 306.

23. Hou Xiangchuan was a PUMC graduate in 1924, returned from studies in the United States and Canada to serve at PUMC between 1928 and 1932, and was a nutritional scientist at Lester Institute in Shanghai from 1932 to 1948. He was also the major figure to develop the early military ration in the 1960s. See Ku Jinfan, "Hou Xiangchuan jiaoshou zhuanlue" (Profile of a nutritionist—Professor Hou Xiangchuan), *Sheng Li Ke Xue Jin Zhan* 14, no. 1 (1983): 89–91.

24. The long list includes John Israel, *Lianda: A Chinese University in War and Revolution* (Stanford, CA: Stanford University Press, 1998); Daniel Bays and Ellen Widmer, *China's Christian Colleges: Cross-Cultural Connections, 1900–1950* (Stanford, CA: Stanford University Press, 2009); and Stephen R. MacKinnon, *Wuhan, 1938: War, Refugees, and the Making of Modern China* (Berkeley: University of California Press, 2008).

25. Jia-Chen Fu, "Scientising Relief: Nutritional Activism from Shanghai to the Southwest, 1937–1945," *European Journal of East Asian Studies* 11, no. 2 (2012): 259–282.

26. The Burma Road linked Lashio in Burma with Kunming in southwest China. For details, see Donovan Webster, *The Burma Road: The Epic Story of the China-Burma-India Theater in World War II* (New York: Farrar, Straus & Giroux, 2003).

27. For a brief introduction of American aid to China during the World War II period, see John D. Plating, *The Hump: America's Strategy for Keeping China in World War II* (Austin: Texas A&M University Press, 2011).

28. John R. Watt, *A Friend indeed: ABMAC and the Republic of China, 1937–1987* (New York: ABMAC, 1992), 2–8. For more details of American medical aid to China during the World War II period, see John R. Watt, *Saving Lives in Wartime China: How Medical Reformers Built Modern Healthcare Systems amid War and Epidemics, 1928–1945* (Leiden: Brill, 2014). The author of the book, however, does not touch nutritional studies during the period.

29. James H. Stone, comp. and ed., *Crisis Fleeting: Original Reports on Military Medicine in India and Burma in the Second World War* (Washington, DC: Office of the Surgeon General Department of the Army, 1969), 73–75.

30. Wan Xin, "Lujun yingyang yanjiusuo" (Army Institute of Nutrition), *Junyi zazhi* 2, no. 3/4 (1942): 360.

31. Zhang Ji of the Medical College, National Central University (Zhongyang Daxue), later joined Wan Xin's team to expand the survey. See Luo Dengyi, "Zhanshi woguo yingyang kexue zhi Dongxiang" (The trend of nutritional science in our country in wartime), *Xin Zhonghua* 3, no. 1 (1945): 129.

32. Wan Xin, Chen Shunzhao, and Chen Shangqiu, "Zhongguo jundui zhi yingyang yanjiu" (Nutritional studies of Chinese troops), *Junyi zazhi* 2, no. 1 (1942): 16–24.

33. On night blindness, see Tang Gongyin, "Yingyang buliangxing zhi yamangzheng" (Nyctalopia caused by malnutrition), *Junyi zazhi* 2, no. 3/4 (1942): 386–393. On edema of the legs, see Li Deming, "Yingyang buliangxing shuizhong—fu biao" (The edema caused by malnutrition with tables), *Junyi zazhi* 4, nos. 7–8 (1944): 18–20. Hou Xianchuan had started studies of malnutritional edemahenceforward. See Hou Xianchuan, "Yingyangbuliang zaocheng zhi shuizhong" (Edema due to malnutrition), *JCMA* 31, nos. 1–2 (1945): 99. The concern about nyctalopia also had roots in the nutritional studies during the 1930s; see Xu Peiquan, "Yingyang jingji yu sushi zhi

guanxi" (The relationship between nutritional economy and vegetarian diet), *Kangjian zazhi* 3, no. 2 (1935): 26–30.

34. Zhang Ji and Zhou Tongbi, "Minzu weisheng: Yingyang jianghua" (Racial hygiene: Talk about nutrition), *Kexue* 23, no. 2 (1939): 91–93.

35. Anonymous, "Yingyang quexian bujiu fangfa" (Remedies for malnutrition), *Xinan yixue zazhi* 2, no. 3 (1942): 11–12.

36. Jin Xin, "Kuanyu shibing yingyang bugou de yixie waizai yuanyin" (On several external causes of soldier's nutritional deficiency), *Lujun jingli zazhi* 5, no. 3 (1943): 33–34.

37. Bai Xin, "Jundui yingyang wenti-fu biao" (Problems of military nutrition [with tables]), *Nuchao* 5 (1946): 27–30.

38. Anonymous, "Yingyang zhuanye: Yangbing diyi, yingyang diyi" (Special issue on nutrition: The first priority is to nourish soldiers with nutrition), *Tujidui* 6 (1944): 20.

39. Jin Baoshan, "Gaishan woguo jundui yingyang yenjiu de jishu" (Collection of studies to improve troop's nutrition in our country), *Lujun jingli zazhi* 4, no. 5 (1942): 19.

40. Yan Kuan, "Zengjin shibing yingyang zhi zhongyaoxing jiqi duice" (The importance and strategies to improve soldier's nutrition), *Lujun jingli zazhi* 6, no. 3 (1944): 31.

41. Stone, *Crisis Fleeting,* 74.

42. Anonymous, "Zhuyin guojun yingyang youliang" (Good nutrition of our troops in India), *Lujun jingli zazhi* 5, no. 5 (1943): 104.

43. Wan Xin, "Health and Nutrition of Chinese Army," *Chinese Journal of Nutrition* 2, no. 1 (1947): 40–41.

44. The name "Hump" was given by Allied pilots in World War II to the eastern end of the Himalayan Mountains over which they flew military transport aircraft from India to China. John T. Correll, "Over the Hump to China," *Air Force Magazine* 92 (2009): 68–71.

45. "China Defense Supplies, Inc., Liaison Agency between the Chinese Government and American Authorities on Lease-Lend Programme," 1941 May–1943 January, MAF 97/774, National Archives, Kew, Richmond, Surrey, UK.

46. Robert Lim was also the chair of China Red Cross, which received donations from American Red Cross. George E. Armstrong, *Robert Kho-seng Lim / Lin KeSheng: Doctor, Soldier, Patriot,* in *Health Care and National Development in Taiwan, 1950–2000: How Medical Leaders in Taiwan, with the Aid of American Medical Advisors, Built a Modern, Health-Oriented Society in Post-War Taiwan* (New York: ABMAC, 2008), 14–17.

47. Zhonghua yixuehui, ed., "Zhanshi xuesheng yingyang zhuangkuang zhi yanjiu (Chongqing zhongxuesheng sanshi zhi diaocha)" (The study of student's nutrition in wartime [A survey of student's diet at middle schools in Chongqing]), *JCMA* 34, no. 10 (1948): 18.

48. ABMAC, "Medicine on a Mission: A History of American Bureau for Medical Aid to China, Inc., 1937–1954," Collection: RF, RG: 2–1954, Series 200, 12–18 (section I) and 1–3 (section II), Rockefeller Archive Center, Sleepy Hollow, New York.

49. Liu Yungmao, "Kangzhan ba nian zhuisui Lin Kesheng xiensheng de huiyi" (Memories of following Mr. Lin Kesheng during eight years of War of Resistance), in *Zhou Meiyu xiensheng fangwen jilu* (Records of interviewing Zhou Meiyu), interviews

by Zhang Pengyuan, recorded by Lo Jiurong (Taipei: Institute of Modern History, Academia Sinica, 1993), 147.

50. Charles F. Romanus and Riley Sunderland, *Stilwell's Mission to China* (Washington, DC: Office of the Chief of Military History, Department of the Army, 1953).

51. The theater surgeon colonel Robert P. Williams, MC, was assigned to organize the Chinese Medical Service, to deploy the small Seagrave medical unit, and to relieve the existing inadequacy. "Chapter XV: The China-Burma-India Theater," *The Second World War*, 507. Office of Medical History, US Army Medical Department, accessed October 15, 2016, http://history.amedd.army.mil.

52. Chinese Medical Service, ed., "With Wingate's Chindits: A Record of Heedless Valor," in Stone, *Crisis Fleeting*, 281.

53. The abbreviation "Compo" in the note could mean any packed provision or early development American military rations, such as types A to D.

54. Chinese Medical Service, "With Wingate's Chindits," 282.

55. Chinese Medical Service, "With Wingate's Chindits," 283.

56. Zhang Yingzeng, "Luetan shibing de yingyang wenti" (Talk on soldier's nutritional problems), *Fendou Yuekan* 2, nos. 5–6 (1942): 16–17; Shao Pei, "Zanzheng yingyang shitiaozheng" (War-caused nutritional deficiency), *Kexue shibao* 13, no. 3 (1947): 59–61.

57. The K ration was an individual daily combat food ration that was introduced by the US Army during World War II. See John B. Youmans, "Chapter IV Nutrition," in *Preventive Medicine in World War II*, vol. 3, *Personal Health Measures and Immunization* (Washington, DC: US Army Medical Publications, US Government Printing Office, 1969), 129.

58. Chinese Medical Service, "With Wingate's Chindits," 283.

59. Chinese Medical Service, "With Wingate's Chindits," 286. Interestingly, American soldiers also threw away some of the K ration's components. See Barbara Moran, "Dinner Goes to War: The Long Battle for Edible Combat Rations Is Finally Being Won," *American Heritage's Invention & Technology* 14, no. 1 (1998): 10–19.

60. Isker, "Dairy Products in the Army Ration," 281–282.

61. James Hopkins, Henry Stelling, and Tracy S. Voorhees, "The Marauders and the Microbes: A Record of Righteous Indignation," *Infantry Journal* 64 (March 1949): 302.

62. Anonymous, "Meiguo shibing de yingyang" (Nutrition of American soldiers), *Xibei jingli tongxun* 28 (1945): 35–37; Anonymous, "Guanyu gailiang jundui yingyang—yingyang xiaoxi" (On the improvement of military nutrition—news of nutrition), *Shibing yuekan* 12 (1943): 15–16.

63. Jin Baoshan, "Gaishan woguo junduiyingyang yenjiude jishu," 19.

64. Zhang Ji and Zhou Tongbi, "Minzu weisheng," 92–3.

65. Wan Xin, Chen Shunzhao, and Chen Shangqiu, "Zhongguo jundui zhi yingyang yanjiu," 16–24.

66. Wan Xin, Chen Shunzhao, and Chen Shangqiu, "Zhongguo jundui zhi yingyang yanjiu," 42, "Fubiao 3: Zhongguo gongren shanshi zhi chengfen (Table 3: The dietetic components of Chinese worker)."

67. Anonymous, "Guanyu gailiang jundui yingyang," 15–16.

68. Anonymous, "Xiaoxi: Junyi xuexiao lujun yingyang yanjiusuo gongzuo jinkuang" (News: Latest work at the Army Institute of Nutrition, Central School of Military Surgeon), *Kexue* 27, no. 3 (1944): 49.

69. By 1947, only six Central Hospitals had been established or designated under the Department of Health. They were in Nanjing, Chongqing, Guiyang, Canton, Tianjin, and Lanzhou. See Chen Jichan, *Zhuisu wushi nianlai cujin wo weisheng sheshi zhi kuanjian shiji* (Tracking back the key events to promote our public health infrastructures in the past five decades) (Taipei: Cheng Chung Book Company, 1981), 14–15.

70. Li Tingan, "Yi tezhong binggan buchong guojun yingyang zhi jianyi" (Suggestion to supplement soldier's nutrition by special biscuits), *Lujun jingli zazhi* 4, no. 5 (1942): 151.

71. Li Tingan, "Yi tezhongbinggan buchong guojunyingyangzhi jianyi," 150 (appendix table).

72. Wan Xin, Chen Shunzhao, and Chen Shangqiu, "Zhongguo jundui zhi yingyang yanjiu," tables 1–3, 8, 12, and 14.

73. Wan Xin, Chen Shunzhao, and Chen Shangqiu, "Zhongguo jundui zhi yingyang yanjiu," table 7.

74. Anonymous, "Xiaoxi: Junyixuexiao lujunyingyangyanjiusuo gongzuo jinkuang," 49.

75. Jing Libin, "Yinguo zhanshi yingyang" (Nutrition in wartime Britian), *Kexue* 28 (1945): 188.

76. Xu Te, "Zhanshi houfang yige zuiyanzhong de wenti—yingyang" (The most serious problem at the home front during the wartime—nutrition), *Junyi zazhi* 6, no. 4 (1946): 19.

77. Shen Tong, "Jundui yingyang yu minzu jiankang" (Military nutrition and national health), *Ziran* 224, no. 22 (1945): 10–14.

78. Zhou Fengjing, "Muqien yu jinhou woguo guomin yingyang wenti zhi yantao" (Discussion on contemporary and future nutritional issues of our nationals), *Liangshi wenti* 1, no. 2 (1944): 54–55, 60.

79. Wan Xin, Chen Shunzhao, and Chen Shangqiu, "Zhongguo jundui zhi yingyang yanjiu," 17.

80. Wang Zhaozhang, "Gaijin houfang budui yingyang liangke juti banfa zhi shangque" (On two specific strategies to improve military nutrition at the home front), *Lujun jingli zazhi* 4, no. 5 (1942): 154–155.

81. Chen Liang, "Gaishan shibing yingyang wenti fubiao" (Improving soldier's nutritional problems [with tables]), *Lujun jingli zazhi* 4, no. 5 (1942): 11.

82. Jin Baoshan, "Gaishan woguo junduiyingyang yenjiude jishu," 19.

83. Chen Meiyu, "Dou de yingyang" (The nutrition of beans), *Lujun jingli zazhi* 4, no. 5 (1946): 120.

84. Chen Meiyu, "Zalian de yingyang" (The nutrition of multiple grains), *Lujun jingli zazhi* 4, no. 5 (1946): 110–113; see also Chen Meiyu, "Dou de yingyang," 114–120.

85. Xingzheng yuan (Executive Yuan), ed., "Zhanshi yingyang teji: Gailiang minzhong yingyang gaishuo—xingzhengyuanyanjiu baogao" (The special issue of wartime nutrition: A summary of improving civilian nutritional intake—Research report by Executive Yuan), *Zhongyang zhoukan* 4, no. 29 (1942): 4–5.

86. Kenneth J. Carpenter, "A Short History of Nutritional Science: Part 3 (1912–1944)," *Journal of Nutrition* 133, no. 10 (2003): 3023.

87. John R. Watt, *Saving Lives in Wartime China: How Medical Reformers Built Modern Healthcare Systems amid War and Epidemics, 1928–1945* (Leiden: Brill, 2014).

Part II

BAD FOODS

5 | The Good, the Bad, and the Toxic

Moral Foods in British India

David Arnold

Writing about food in relation to notions of what is moral, or conversely what is bad or immoral, is necessarily problematic, if only because it runs the risk of replicating (and appearing to endorse) the partisan views and prejudicial discourses of those whose attitudes and opinions we seek to discuss. But we can legitimately speak about moral foods in much the same way as cultural geographers have invoked the idea of "moral geographies," "moral climates," and "moral landscapes."[1] The point is not to approve subjective views and validate moralizing discourses but to recognize the importance such observations and ideas have had in the understanding and framing of place (including landscape and climate), especially in spatial and social domains (such as those of the colonies) that were set apart from, or otherwise distinct from, those of the observer. Just as the conceptualization of a landscape (even its very existence as a landscape) might be located within a given moral and political schema, so might the same technique be applied to food. Indeed, not only might food itself be subject to a variety of moralizing discourses, it might also be seen as being situated within (or representative of) a specific kind of moral environment or serve as a critical trope in broader moralizing about race, place, and climate. In other words, food might itself be a subject of moralization but also function as an index for other social norms and spatial values.

There is the further possibility that such moralizing discourses, however apparently partisan and subjective to our eyes, could receive the authoritative endorsement of contemporary science, just as, conversely, that

such moralizing pronouncements could be challenged and contested even though they bore the imprimatur of science. There is one additional consideration as far as this chapter is concerned: that is that the term "moral" was in authoritative use in colonial India—even the title of the Government of India's annual report to the British parliament between 1859 and 1935 referred to India's moral as well as material progress.[2] More routinely, "moral" factors were among the many considerations appraised by colonial physicians in relation to health and sickness in India.[3] The idea of the moral was thus prominent both in the general, self-legitimizing discourse of colonial governance and, more specifically, in relation to issues of food, health, and material well-being.

There were two main ways in which the moral character of Indian foods came to be represented. The first is the more straightforward. It concerns the growing and increasingly technical body of work relating to potentially poisonous foodstuffs or to surrogate foods that were considered harmful and even toxic in nature but were consumed by sections of the Indian population from sheer necessity. These were "bad" foods in the sense that they were demonstrably harmful to those who consumed them, but in colonial discourse they also reflected negatively on the social and material conditions of India that made the recourse to such deficient or harmful foods necessary. Throughout the nineteenth and into the twentieth century the nature of Indian foodstuffs was taken by the colonial authorities to be an index of the condition of indigenous society, especially of its poorest and most vulnerable members.[4]

A second dimension of the moral question is less clear-cut. It involved the judgmental view held by many colonial writers, but shared by many middle-class Indians as well, about the deficient or ill-balanced nature of the Indian diet and of many staple food items, particularly rice. Rice was seen to be a "bad" food in as much as it was understood to be less nutritious, less energy-giving, less vitalizing than European cereals such as wheat, and so contributed to what was perceived to be the moral weakness as well as physical inferiority of the many Indians for whom it constituted the principal diet. As a "bad" food, rice became a significant racial marker, serving to delineate not just between Europeans and Indians but also between India's different races and geographical zones. For this pejorative view the food science and medical expertise of nineteenth-century India seemed to provide extensive evidence and authoritative support. The subsequent story of rice as a "bad" food was complicated by its association

with the supposed toxicity of rice as manifested through the nutrition-deficiency disease beriberi, making rice seem almost as harmful to health as many surrogate foods. Although, as other chapters in this volume illustrate, rice diets were common to many other Asian societies, British and Indian writers rarely made reference to their food practices, except, from the 1890s onward, in relation to the beriberi debates. However, as recent scholarship on India has shown, dietary issues became a prominent issue in relation to nationalist discourse and middle-class identity in India by the 1920s and 1930s.[5] The story of "bad" rice thus ultimately became one of redemption as it was shown, especially by Indian writers, to be no more harmful than other food grains, or detrimental to health only because of the manner in which it was prepared and consumed.

Toxic Foods

During the nineteenth century India was struck by a series of devastating famines. Millions of people died from insufficient food or through a lethal combination of starvation and disease. A recurrent factor in India's famines was the failure of food crops and the resulting scarcity of food grains and the loss of employment and purchasing power. Not only did normal means of subsistence collapse, but so, too, did the markets on which poor consumers relied. One response of famine-struck people was therefore to look beyond the market and their normal range of subsistence. This might entail eating foods that were normally considered taboo, such as rodents and insects. More commonly it meant foraging for what were termed "famine foods." In an important locational shift away from the urban marketplace, surrogate foods were sought on waste ground and in forests and jungles; otherwise marginal land thus became central to the survival strategies of the poor. Some of these foods were wild grasses and grains, or various kinds of greens. Others were the tubers, fruits, and leaves of plants that were familiar to consumers in normal times but used then only sparingly or seasonally to eke out more wholesome foods. But famine necessitated the eating even of foods normally considered by the poor too bitter or indigestible to use. Others required cooking to make them palatable—a task that was impossible when fuel was in short supply, cooking pots had been sold, and the famine-struck were too weak to do more than gather and eat what they found in the wild. Some plants were actively toxic: one

account of famine in mid-1890s Bengal referred to Santhal tribals emerging from a forest carrying armfuls of wild plants, "enough," according to one observer, "to poison a regiment."[6] Even when they did not kill, some surrogate foods caused severe diarrhea or acute irritation to the gut and bowels, further weakening already feeble and malnourished bodies. The extent of the debility and mortality caused by famine foods is impossible to quantify, but it is bound to have increased the soaring number of deaths from starvation and disease.

Most contemporary accounts of famine in India made reference to the collection and consumption of these emergency foods, using them to illustrate the extremes of destitution and suffering to which the poor were reduced.[7] Reporting on their nature, use, and physiological effects became a task taken up by colonial physicians and botanists and by their Indian counterparts, thereby establishing an investigative connection between mass hunger and field or laboratory science. In 1886, J. C. Lisboa, a Goan botanist resident in Bombay, published a detailed description of the "famine plants . . . used as food during seasons of scarcity." His evidence came primarily from the famine of 1876–1878, which had caused widespread distress and mass mortality across a large swathe of western and southern India. During the famine, Lisboa noted, many British officials had for the first time become aware of the extensive range of "wild herbs" resorted to by the poor "for want of ordinary food." He speculated that, while unfamiliar to most Europeans and even town-dwelling Indians, knowledge of these plants—of which he listed nearly a hundred—was the result of accumulated rural experience of repeated episodes of drought, conquest, and failed harvests.[8] In 1906, Chunilal Bose, from the chemical examiner's department in Calcutta, published a paper on the toxic principles of one such famine food, the fruit of *Luffa aegyptiaca,* "the Egyptian cucumber," known in Bengal as the *dhoondool* plant. This, Bose reported, was occasionally eaten by poor Bengalis but only after being repeatedly washed and boiled to remove its bitter taste. Cultivated varieties of the plant tasted sweet and were harmless, but the uncultivated form, gathered as a famine food and barely cooked, was bitter, poisonous, and caused vomiting and diarrhea.[9]

Twenty years separated Lisboa's descriptive list from Bose's scientific analysis of *dhoondool;* in that period botanical knowledge and techniques of biochemical analysis had made considerable advances and grown substantially more sophisticated. But it is significant that in both cases

Indians were motivated to undertake scientific enquiries into the food of the Indian poor and to position themselves between Western science and European ignorance on the one hand, and vernacular knowledge and "native" experience on the other. Famine foods and poisonous plants were a significant stimulus to botanical and biochemical investigation. Bioprospecting has generally been thought of as the search, under imperial auspices, for plants that were commercially useful or medicinally beneficial, but in this instance inquiry into the harmful effects of undesirable famine foods forged a link between Indian (as well as British) scientific personnel and the material conditions of the Indian masses.[10] Such studies suggest a sense of moral obligation, as much as any scientific imperative, to investigate the emergency foodstuffs on which so many Indians relied, and show how colonial medicine began to emerge from the narrow enclave of European need and agency to which it was originally confined.[11] At the same time, given the enormous administrative and political importance attached to famine in colonial India, the recourse to famine foods served for many commentators to demonstrate the essential poverty of the Indian countryside, the extremes of human degradation to which Indians were reduced under the British, and hence the bitter immorality of colonial rule itself.[12]

It was a short step from the investigation of emergency foods, resorted to in the extremity of dearth and famine, to foodstuffs that were grown and consumed on a more regular basis by the poorer classes but which were known to have toxic properties. The main example of this was lathyrism, the condition caused by excessive consumption of a pulse, *kesari,* harvested from the vetch *Lathyrus sativus.* This plant was grown, or occurred in a semiwild state, in many parts of central and northern India, especially on poor soils where no other crops would thrive. Dal made from *kesari* was eaten by extremely poor peasants, whose livelihood depended on landlords who controlled their labor and kept them in abject poverty. *Kesari* was used to remunerate laborers for their toil or it was the only crop that would grow, especially in rain-deficient seasons, on the meager patches of land assigned to them. In small quantities and mixed with other foodstuffs *kesari* was harmless, but when it became, for months at a time, almost the sole item of consumption, the results were dire—a paralysis that caused loss of mobility in victims' lower limbs and brought on a slow death.

References to lathyrism in Sanskrit medical texts can be traced back as far as the sixteenth century.[13] The first known British observations were

made by the East India Company surgeon-naturalist Francis Buchanan during his travels in Bihar in 1811–1812. He noted a "species of lameness," affecting villagers of all ages and both sexes, that caused muscular weakness in the legs and painful, irregular movement of the lower limbs. But Buchanan dismissed as "fanciful" the idea that *kesari* might be the cause of this condition.[14] Further notices of lathyrism soon followed. Hinting at a more moral argument and a degree of personal compassion for the sufferers, in 1839 Robert Rankine, civil surgeon of Sarun district in Bihar, linked the disease to the poverty of the laborers and their "complete dependence" on the *zamindars,* the class of "improving" landlords the British had themselves been instrumental in creating under the Permanent Settlement Act of 1793.[15] Still more detailed discussion of lathyrism was presented in the 1850s and 1860s by James Irving, civil surgeon at Allahabad in the North-Western Provinces. Apart from giving a precise account of the "palsy," Irving drew up tables showing the nature of its "injurious effects" and illustrating the geographical extent of its distribution: he was fully convinced that *Lathyrus sativus* (that "poisonous vetch") was the cause. He also established that villagers, while recognizing a connection between eating *kesari* dal and the onset of paralysis, saw no alternative but to rely on it as their main item of diet when other crops failed or at seasons of the year when they had no alternative subsistence, only hoping that they would not become permanently incapacitated as a result. In other words, they risked poisoning rather than starve.[16]

Lathyrism proved a subject of enduring scientific interest from the 1830s to the 1960s. Controversy over the nature of the disease was kept alive by alternative claims that some other plant or unspecified ergot might be to blame; but in all this extensive literature an underlying connection between poverty and poisoning was seldom lost sight of by medical writers. The incidence of lathyrism was shown to peak following famine and food shortages, as during the late 1930s and in the later stages of World War II, when food prices soared to exceptional levels.[17] Through their studies of lathyrism colonial physicians and latterly Indian nutritionists demonstrated the morally indefensible position by which peasants were forced by their poverty to depend upon a food known to cause paralysis, and yet most failed to go beyond this to make a more outspoken attack on the zamindari system that maintained that dangerous dependency.

In the rural pathology of Indian foodstuffs, *kesari* dal was not the only dietary ingredient to fall under suspicion as being responsible for outbreaks

of poisoning. Another was the millet known as *varagu* in Tamil and in Hindi-speaking regions as *kodo* (or *kodon*), a grain cultivated as a food staple in many dry, unirrigated areas. In south India it was—and still is—valued for making flour for *idlis* and other dishes. However, from the 1860s, as scientific investigation of Indian diets intensified, reports circulated in the Madras presidency that *varagu* was a potentially dangerous grain, causing illness and occasionally death to humans and to animal livestock. One can see in this critical discourse an example of how what was valued in Indian society as wholesome and nutritious was viewed with skepticism by at least some representatives of colonial science. At one stage the provincial government even considered banning *varagu* cultivation entirely, but this seemed utterly impractical, and there was, besides, insufficient proof of its toxicity. W. G. King, the Madras chemical examiner, reported in 1874 on a sample of the grain he had been sent in which "neither chemistry nor the microscope has been able to detect either poison or disease."[18] The matter was then officially dropped, but periodically reports surfaced in the medical press of acute (if seldom fatal) poisoning from *kodo* flour. The apparently poisonous nature of the grain was again highlighted toward the end of World War II, when the Madras government, faced with severe food shortages, encouraged the consumption of millets. Laboratory tests showed that it could be toxic to dogs.[19] Here, then, was a food scare for which there appeared to be only slight scientific evidence, but one in which Indian diets were treated with suspicion, sometimes being seen as not just bad in the sense of undesirable but actually or potentially toxic.

Rice and Morality

In all societies food is a bearer of cultural values, an expression of social hierarchy, and a marker for differences of race, age, class, and gender. India was no exception: food played an essential part in creating and maintaining social status (including caste identity and ranking), in ceremonial rites and the routines of everyday life, and in a wide range of economic transactions and commercial activities. In the colonial era, Indians' food practices and dietary values served as primary markers of difference between Indian subjects and British rulers, but they could also constitute an active or implicit challenge to Western ideas of what was

normal, desirable, healthy, or harmful. For instance, Hindus' repulsion at the consumption of beef and Muslims' repugnance at the eating of pork epitomized the way in which the food practices of Europeans of all classes were not only alien to a large proportion of their "native" subjects but also made them appear grossly inferior. Even though the British adopted and assimilated many items of Indian cuisine, including curries, chutneys, and rice dishes such as pilau and kedgeree, they still sought to uphold a cultural distance between their dietary preferences and those of the Indian population.[20] To take a small but emblematic illustration of this, in the orphan institutions set up for white and mixed-race children in India a dietary regime was prescribed that might include rice but also bread, potatoes, meat (usually mutton or beef), and plum pudding. This incorporation of Western food items and dishes was clearly designed to do more than provide a "healthy and simple diet." It was also about maintaining, or inculcating, a European lifestyle and preventing orphan children from the moral peril of becoming too Indianized.[21] Similarly, European prisoners, confined in Indian jails, were fed a diet that differed widely from that provided for Indians.[22] Within such racially managed spaces, the more European the institution and its inmates, the more attached to European (more exactly, British) were the dietary practices employed.

Accustomed to meat-eating (at least as a desideratum) and to the consumption of such cereal grains as wheat, oats, and barley, supplemented by root crops such as potatoes, many Europeans found Indian diets in which meat, and even fish and eggs, were absent and that consisted largely of rice to be not only odd and abhorrent but also self-evidently deficient. This was especially so in the two provinces where British rule was first established—Bengal and Madras—and where vegetarian rice-based diets were most commonly the norm, whether from poverty or from cultural choice. This sense of dietary difference—and its perceived moral as well as physical consequence—was sharpened by the contrast evident to Western eyes between rice-eating Bengalis and Madrasis and the inhabitants of northern and northwestern India, from whom India's "martial races" were mainly recruited and whose diet included meat, wheat flour, and milk products. This prejudicial reading of Indian rice diets was always a partial misinterpretation of the evidence. Discerning observers such as William Robert Cornish, the sanitary commissioner in Madras in the 1860s and 1870s, noted that, however prestigious rice might be, many south Indians, especially of the laboring classes, mainly consumed millets (generally

considered more suitable for sustaining physical labor than rice) and that any nutritional deficiencies in rice were at least partly compensated for by the addition of green vegetables and pulses.[23] Nevertheless, the broad distinction between rice and wheat diets—and the moral and racial assumptions that accompanied that distinction—had a long lineage, going back at least as far as Robert Orme in the mid-eighteenth century, and was vigorously maintained by many subsequent European observers.[24] In these observations, censorious notions of diet, climate, and race often conjoined to favor the seemingly more temperate, European environment of northern India against a more alien, tropical Bengal. Thus, the East India Company surgeon James Hutchinson, writing in 1845, remarked how Indian *sepoys* (soldiers) from the north sent to Bengal "exchanged the fine, pure, bracing air of Hindoostan, for the raw, damp, miasmal atmosphere of Bengal, with its brood of splenetic and cachectic diseases; and the wholesome wonted dish of wheaten flour, for the poor nourishment to be derived from a washy dish of rice."[25]

Such observation became increasingly entrenched in the science of colonial India as between the 1860s and 1920s diet surveys and nutritional studies intensified the criticism of vegetarian or largely rice diets and as the British found themselves closely engaged in the dieting of Indian prisoners and in the provision of food in famine relief (both arenas in which they recognized a moral responsibility to keep inmates alive), and in using the nature as well as the volume of Indian food consumption as an index of Indian poverty or well-being.[26] There was a powerful colonial view that, even though such diets might not be toxic or detrimental in the manner of the surrogate foods described earlier, or might not cause specific diseases such as lathyrism, the absence of meat and a "poor" diet of rice were insufficient to sustain hard physical labor or left the populace exceptionally vulnerable to the effects of debilitating or deadly diseases such as cholera and malaria. Belief in the physical frailty of many Indians was further seen to underpin an apparent moral weakness.

One of the most strident statements of this view was to be found in the work of Norman Chevers of the Bengal Medical Service. Chevers was an authoritative figure, writing extensively on medical and health issues and playing an influential part in the formation of colonial views on crime, toxicology, and medical jurisprudence. In his *Commentary on the Diseases of India* in 1886, Chevers described what he called "Morbus Bengalensis." He linked this imagined condition to the de facto state of famine he believed

to prevail in Bengal and among its semistarved people for most of the time. "Born of a famine-stricken race," he wrote, "nursed by a starved mother, working hard upon a food [i.e., rice] the use of which is slow starvation, the Bengali's life burns out rapidly." In his view the "only valid remedy" for this complaint, "as well as the only means of enabling the Bengali to withstand the marsh poison [malarial miasmas] of his country," was "the introduction into Bengal of a higher staple of food"—by which he clearly meant the substitution of wheat for rice.[27] Chevers further observed that a diet of rice, wheat, lentils, and oil might suit the Indian climate and Indian constitutions, but its great deficiency was its poverty. Reverting to Bengalis, he went on, if they ate more meat, or vegetables and fruit, and added wheat flour to their daily diet, "the Bengali would soon rival the upcountrymen in courage and strength. As the potato has impoverished the south of Ireland, so rice maintains perpetual semi-starvation in Bengal."[28]

Chevers' hostile view of rice as a food staple might appear to us to be little more than racial bluster, a means to deride and denigrate Bengalis, but it appeared to derive support from many other dietary experts at the time. Thus, a detailed analysis of the nature and chemical composition of Indian food grains published by A. H. Church in London in 1886 endorsed the idea that rice was deficient in nutritive and energy-giving elements and, being difficult to digest, might cause dyspepsia, diarrhea, and fever. Prisoners obliged to live almost entirely on a diet of rice in India became, Church wrote, anemic and prone to "land scurvy." Even the best rice, Church opined, had two "capital defects, being deficient in potash, phosphoric acid, lime, and other mineral matters, as well as in nitrogenous or flesh-forming matters, that is, albuminoids."[29] While also critical of many other Indian food staples, Church took a far more favorable view of oats, an essentially European grain that had been introduced to India in recent times, chiefly to feed horses, "but the richer natives near the chief centres of English influence are beginning to appreciate the value of oatmeal as human food."[30] The contrast between rice, a local and therefore inferior grain, and oats, an imported and therefore superior foodstuff, was thus made apparent, even with respect to the diet of horses.

But there were many contradictions in the colonial position with respect to diet. Not the least of these was that while the medical discourse on rice was generally hostile, colonialism helped to institute and oversee an expanding rice market and growing consumption of rice, especially among the poorer classes.[31] By contrast with the social and spatial

marginality of famine foods and *kesari* dal, rice was central to Indian agriculture and commerce. India's large prison population, especially in Bengal, was principally dieted on rice rather than the millets that were the primary food grain of the poorer classes across a large part of India. Plantation workers, as on the tea estates of Assam, were supplied with rice rather than millet, and rice became the main item of consumption among India's growing cohort of factory workers.[32] In the jails, where the health of prisoners was closely monitored and where colonial medical officers enjoyed exceptional authority, rice was supplemented with vegetables and condiments that were believed to provide a necessary nutritional and energy-giving supplement, and yet prison studies of diet and nutrition also served to underscore the view that rice was a poor food and not, by itself, conducive to health and well-being.[33]

Still more influential evidence on the deficiency of Indian rice diets was provided by David McCay, professor of physiology at Calcutta Medical College, in 1912. Using the prison populations of northern and eastern India as his data source, McCay argued that wheat was by far the most valuable of the food grains supplied to prisoners, with rice a poor alternative. Ignoring the rice cultures of East Asia, McCay drew heavily on the idioms of the "martial races" and military recruitment practices in India to present a stark distinction between the "physical development and well-being" of wheat-eating north Indians, extensively recruited into the army, and rice-eating Bengalis, who were almost entirely excluded from it. Climate and social practices, he argued, could not alone account for this: dietary differences were crucial. Wheat eating placed the population of northern India "on a distinctly higher plane of physical development" from that of Bengal. "The general muscularity of the body is decidedly better," McCay wrote, "and their capabilities of labour are greater. They are smarter on their feet, more brisk and more alive to the incidents of everyday life." Moreover, he added, "they do not present such slackness and tonelessness as one is accustomed to observe in the people of Lower Bengal."[34]

In a second study of Indian nutrition, McCay further argued that of all cereals rice was the poorest in protein, providing only half that supplied by wheat. To be an adequate dietary source it needed to be extensively supplemented with pulses, legumes, and other sources of plant protein. McCay again reverted to the "martial races" argument, declaring that the "ordinary working Bengali is a particularly thin individual, decidedly wanting in

body fat, and his desire for, or capabilities of, muscular exertion are less than in any other race with whom we have had to do."[35] In this second work, published in London, McCay made explicit a claim that had been implied in his previous work and in earlier writing about Indian diets—that wheat diets were conducive to masculinity (as so evidently displayed by India's "martial races"), while rice diets were a cause of feebleness and "effeminacy."[36] The perceived morality of food was thus deeply implicated in the understanding of race and race ideology in colonial India, and yet food practices also pointed to the possible malleability of at least some racial characteristics. There was no "racial reason," McCay averred, why "the Bengali, if he were properly fed," could not become "as well developed and as efficient" as a well-nourished Eurasian, born and brought up in India.[37]

A further twist to the rice saga was that many middle-class Indians, especially in Bengal, began to share the censorious Western view of their diet as nutritionally deficient and even as conducive to moral weakness as well.[38] Thus Chunilal Bose, the former chemical examiner in Bengal, argued in 1929, "Our present Indian diet is defective and ill-balanced and is directly responsible for the progressive deterioration of the physical health of the people, particularly of Bengal, and indirectly affecting their moral and economic well-being."[39] The idea that vegetarian diets were poor diets and so required additional items of consumption for their improvement became fairly widespread, though equally there were critics who saw changes to Indian diets as a recent sign of racial decay and a decline from the former days of physical prowess and moral courage Indians had once enjoyed.[40] In other words, the question of moral foods became a matter of intense controversy among middle-class Indians as much as between Europeans and Indians. This shows the extent to which even in the late nineteenth and early twentieth centuries nutritional science could have a significant impact on popular attitudes toward diet and not just on state policies concerning the dieting of soldiers and prisoners. But it also shows how science was not the only arbiter of taste or source of authority as to what constituted moral or immoral foods. Traditional or resurgent social and cultural values played a part in this too.[41] The result was often a kind of "braiding," in which Western nutritional ideas were reworked and redeployed in defense of indigenous food practices or modified versions of preexisting diets.[42]

By the early twentieth century the reputation of rice had reached its nadir. A further factor in this was growing awareness of the widespread

incidence of beriberi and its intensive scientific investigation. Although this disease had been observed in India for decades, it was not considered a major threat to health outside a few specific pockets, such as the Andhra delta in south India, and its etiology remained even more of a mystery than that of lathyrism.[43] But in the closing decades of the nineteenth century and early years of the twentieth, beriberi became a focus of international concern, notably in Japan, but also among the colonial powers of Southeast Asia, who saw not only prison and asylum populations incapacitated by the disease but also large numbers of plantation laborers and urban workers as well.[44] The growth of food science, the study of nutrition, and the emerging knowledge of vitamins operated together to establish that beriberi was probably caused by mechanically milled and highly polished rice in which almost all the thiamine (vitamin B1) content had been removed along with the grain's outer husk. Beriberi was thus revealed as a nutrition-deficiency disease, which could be prevented by limiting the degree of mechanical milling, by varying the diet to restrict overreliance on rice, or by using bran extract as a supplement to provide the necessary vitamin intake.[45]

In the short term, however, the identification of beriberi with rice made the scientific (and, indeed, moral) case against rice consumption even more compelling. Beriberi was widely seen by the medical establishment in India as a toxin or poison located within the grain and activated by certain environmental factors or as an ergot that attached itself to rice grains when exposed to damp and humid storage conditions.[46] In other words, it was difficult to prevent rice from becoming a harmful, even toxic, foodstuff. Perhaps the low point in the reputation of rice came in the 1920s with the nutritional studies carried out by Robert McCarrison of the Indian Medical Service. Echoing many of the findings of McCay's earlier studies of jail diets, McCarrison confirmed the association between beriberi and highly milled rice.[47] But, more significantly still, he presented a stark contrast between "a good diet" and "a bad one." The former was typified by the diet of Indian "races" such as the Sikhs, which included meat, wheat, and milk products, and which, according to McCarrison, was representative of "the highest type of physical efficiency met with in this country, or indeed, in any part of the world." By contrast, the typical Bengali or Madrasi diet, heavily rice-based, exemplified a "bad" diet and produced low energy levels and poor physique.[48] In a related study that examined the nutritional value of millets as well as wheat and rice,

McCarrison observed, "Wheat is the staple food-grain of the stalwart races of the North of India; *paddy,* in its various forms of rice, is the staple food-grain of the less vigorous races of the South and East."[49] He concluded, "It is thus obvious how poor is the staple article of diet on which so many millions of the Indian people rely for physical efficiency and health. It is evident also that the superior physique of the wheat-eating races of the North of India is related to the superior nutritive value of wheat."[50] Much like Chevers decades earlier, McCarrison argued that every encouragement should be given to increasing wheat cultivation in India, along with the greater inclusion of milk, green vegetables, and fruit.

And yet rice, so consistently maligned, was capable of redemption. Wallace Aykroyd, McCarrison's successor in the nutritional research institute at Coonoor in south India, adopted a radically different approach, eschewing the racial categories that governed McCarrison's work, and instead instituting a series of detailed diet surveys that examined the food intake of local sample groups, such as schoolchildren or hostel students, whose nutritional status was clearly deficient. In place of the stark wheat versus rice contrast, Aykroyd and his several Indian associates demonstrated that Indian diets were defective across a wide spectrum of castes, communities, and age groups, among men, women, and especially children; that a range of specific nutritional deficiency diseases (and not just beriberi) could be detected; and that Indian diets as a whole needed diversification. In other words, rice was not in itself the problem: endemic poverty, malnutrition, and ignorance of basic dietary principles were much more to blame.[51]

There was, besides, a broader defense of rice to be made. Recognition that beriberi might be caused by heavily milled rice prompted government initiatives, as in Madras, to encourage people not to abandon rice entirely but to vary their diet or take a vitamin supplement.[52] Studies in south India in the 1930s suggested that in some respects—as in terms of calorific value—rice was *not* significantly inferior to most Indian millets, though it was acknowledged to be lacking in calcium, phosphorus, and protein.[53] The developing knowledge of nutrition could thus be deployed to exonerate rice and to argue that it could form the basis for a nutritionally sound diet, even without the addition of meat. For Indians in general, and much maligned Bengalis in particular, rice could again be presented positively as constitutive of regional identity and national selfhood rather than, as in the negative stereotyping of colonial discourse, as a marker of physical and moral inferiority.[54]

In his presidential address to the Indian Science Congress in 1936, Upendra Nath Brahmachari, a leading biochemist and physiologist, mounted a spirited defense of Indian diets. Rebutting the views expressed by Chevers nearly ninety years earlier, he noted how effectively Indian soldiers had performed during World War I despite in the main subsisting on meatless diets. This suggested to his mind that vegetable protein might actually be superior to that derived from animal sources, just as diversified diets, including soya beans, skimmed milk, bran extract, and groundnut cake, might overcome many of the apparent deficiencies in "poor" Indian diets. Like Aykroyd, Brahmachari believed that such changes could be made without jettisoning rice as a food staple and at no great additional cost to the consumer.[55] There were other ways, too, in which rice could be exonerated. If one of the main causes of the nutritional deficiency of rice was mechanized milling, then it could be argued that either the milling should be made less rigorous (thereby preserving more of the thiamine content), or that mechanical milling should be abandoned and a return made to traditional hand-pounding (in which much of the pericarp was retained). This latter view appealed to Mohandas Gandhi and to a number of other leading nationalists (such as Prafulla Chandra Ray in Bengal) who raised more general objections to the mechanization of food preparation and the neglect of traditional food technologies.[56] In other words, the accusation that rice was a "bad" food was deflected onto the immorality of those capitalists who profited by the sale of milled rice and those consumers who misguidedly desired highly polished rice.[57] Rice itself was innocent: capitalism, consumerism, and technological modernity were to blame.

Conclusion

This chapter has sought to demonstrate how in British India in the late nineteenth and early twentieth centuries ideas of food morality evolved and were in turn adapted or contested. For much of that period, as representatives of the colonial power, British medical and nutritional personnel provided the discursive agency and operated the institutional framework within much of the debate over food was conducted. But this was never a one-sided affair, for Indians like J. C. Lisboa and Chunilal Bose were also figures of practical as well as polemical significance, just as Indians of all classes, not least the laboring classes and the famine poor, proved important

scientific and administrative subjects. The protracted debate over the moral and material value of rice illustrates the complexity of these exchanges and interactions across conventional lines of race and class. Further, the morality or immorality attached to a specific food was seldom about its alleged or proven nutrition alone. Food perennially served as a moral marker for something beyond itself—for race and physique, for climate and disease, for colony and nation. Its value was played out in relation to a whole series of different social arenas and spatial sites—from the prison to the home, from the army to the school, from the laboratory to the factory. Food appeared capable of representing a wide and ever-varying set of meanings. But we should not overlook the very real changes that these shifting moral perspectives might in the long term create—in the understanding of famine foods, lathyrism, and beriberi, in the fashioning of institutional diets, or in the changing nature of middle-class tastes and working-class diets. Food could be the most moral of issues but also the most material of needs.

Notes

1. Felix Driver, "Moral Geographies: Social Science and the Urban Environment in Mid-Nineteenth Century England," *Transactions of the Institute of British Geographers* 13, no. 3 (1988): 275–287; David N. Livingstone, "The Moral Discourse of Climate: Historical Considerations on Race, Place and Virtue," *Journal of Historical Geography* 17, no. 4 (1991): 413–434.

2. See, for example, L. F. Rushbrook Williams, *Statement Exhibiting the Moral and Material Progress and Condition of India, 1922–1923* (London: His Majesty's Stationery Office, 1923).

3. Thus, according to one physician in the 1840s, disease in India was due not only to climatic and environmental factors but also to "the social condition, habits, and morals of the population"; Kenneth Mackinnon, *A Treatise on the Public Health, Climate, Hygiene, and Prevailing Diseases of Bengal and the North-West Provinces* (Cawnpore, India: Cawnpore Press, 1848), 1.

4. See, for instance, *Result of Enquiries Made in 1888 by Lord Dufferin into the Condition of the People of India* (London: His Majesty's Stationery Office, 1902).

5. Rachel Berger, "Between Digestion and Desire: Genealogies of Food in Nationalist North India," *Modern Asian Studies* 47, no. 5 (2013): 1622–1643; Jayanta Sengupta, "Nation on a Platter: The Culture and Politics of Food in Colonial Bengal," *Modern Asian Studies* 44, no. 1 (2010): 81–98.

6. Malabika Chakrabarti, *The Famine of 1896–1897 in Bengal: Availability or Entitlement Crisis?* (Hyderabad, India: Orient Longman, 2004), 319.

7. During the 1868–1870 famine in the North-Western Provinces, "substitute" foods included fruits from the *mahua* tree, the stems and roots of the lotus and other

water plants, and the bark of the *Bombax* and Indian fig trees; Frederick Henvey, *A Narrative of the Drought and Famine which Prevailed in the North-West Provinces during the Years 1868, 1869, and Beginning of 1870* (Allahabad, India: Government Press, North-Western Provinces, 1871), 55.

8. J. C. Lisboa, "Famine Plants: Wild Herbs, Tubers, etc., Used as Food During Seasons of Scarcity," *Gazetteer of the Bombay Presidency,* vol. 25, *Botany* (Bombay: Government Press, 1886), 190–191.

9. Chunilal Bose, "The Toxic Principles of the Fruit of Luffa Aegyptiaca," in *The Scientific and Other Papers of Rai Chunilal Bose Bahadur,* ed. J. P. Bose (Calcutta: Forward Press, 1924), 1:86–103.

10. Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge, MA: Harvard University Press, 2004).

11. On medical enclavism, see David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India* (Berkeley: University of California Press, 1993), chap. 2.

12. For a contemporary British view, see William Digby, *The Famine Campaign in Southern India, 1876–1878,* 2 vols. (London: Longmans, Green, 1878). For the famine critique, see Sunil S. Amrith, "Food and Welfare in India, c. 1900–1950," *Comparative Studies in Society and History* 50, no. 4 (2008): 1010–1035; Janam Mukherjee, *Hungry Bengal: War, Famine, and the End of Empire* (London: Hurst, 2015).

13. Dominik Wujastyk, *The Roots of Ayurveda: Selections from Sanskrit Medical Writings* (New Delhi: Penguin, 2001), 15.

14. Francis Buchanan, *An Account of the Districts of Bihar and Patna in 1811–1812* (Patna, India: Bihar and Orissa Research Society, n.d.), 1:274.

15. Robert Rankine, *Notes on the Medical Topography of the District of Sarun* (Calcutta: G. H. Huttmann, 1839), 37.

16. James Irving, "Report on a Species of Palsy Prevalent in Pergunnah Khyragurh, in Zillah Allahabad, from the Use of Kessaree Dall, as an Article of Food," *Selections from the Records of Government, North-Western Provinces,* (Allahabad, India: Government Press, North-Western Provinces, 1866), 2:265–276; James Irving, "Notice of Paraplegia Caused by the Use of Lathyrus Sativus in the Various Districts of the North-Western Provinces of India," *Indian Annals of Medical Science* 12, no. 23 (1868): 89–124.

17. "Lathyrism," editorial, *Indian Medical Gazette* 74, no. 7 (1939): 421–422.

18. King to District Surgeon, Salem, September 22, 1874, Madras Board of Revenue Proceedings, no. 3107, October 27, 1874, India Office Records (hereafter IOR), British Library, London.

19. K. V. Sundara Ayyar and K. Narayanaswami, "Varagu Poisoning," *Nature* 163 (1949): 912–913.

20. For the incorporation of Indian dishes into British cuisine, see "Oriental Cookery," in *A New System of Domestic Cookery,* by Emma Roberts, 6th ed. (London: John Murray, 1842).

21. *Selections from Records of Madras Government,* 2, 40. The diet of the orphans at this asylum was intended to aid their "physical, mental and moral improvement" (234).

22. For the central importance of diet (and its variations according to race, caste, and religion) in colonial prison management, see *Report on the Diet of Prisoners and of the Industrial and Labouring Classes in the Bombay Presidency* (Bombay: Education Society's Press, 1865).

23. William Robert Cornish, *Reports on the Nature of the Food of the Inhabitants of the Madras Presidency* (Madras: Graves, Cookson, 1863), 2–8, 27–28.

24. For the association of rice with the "soft" climate of Bengal, the indolence-inducing "luxuriance" of its fertile soil, and the consequent want of "bodily strength, courage, and fortitude" among the common people of the province, see Robert Orme, *A History of the Military Transactions of the British Nation in Indostan from the Year MDCCXLV,* new ed., (London: F. Wingrave, 1803), 2:4–5.

25. James Hutchinson, *Observations on the General and Medical Management of Indian Jails and on Some of the Principal Diseases Which Infect Them,* 2nd ed. (Calcutta: Bengal Military Orphan Press, 1845), 134.

26. David Arnold, "The 'Discovery' of Malnutrition and Diet in Colonial India," *Indian Economic and Social History Review* 31, no. 1 (1994): 1–26.

27. Norman Chevers, *A Commentary on the Diseases of India* (London: J. and A. Churchill, 1886), 568–569.

28. Ibid., 23.

29. A. H. Church, *Food-Grains of India* (London: Chapman & Hall, 1886), 75–76.

30. Ibid., 86.

31. On the "almost universal preference" for rice, even though other food grains might be cheaper and more nutritious, see Cornish, *Reports,* 28.

32. By the 1930s, cheap, broken rice, mainly from the rice mills of Burma, had become a dietary mainstay among the laboring classes of Madras; K. Ramiah, *Rice in Madras: A Popular Handbook* (Madras: Superintendent, Government Press, 1937), 94–95. Even immigrant workers in the Calcutta jute mills from predominantly wheat-eating regions adopted rice, and by preference, milled white rice, in their diet; A. C. Roy Choudhury, *Report of an Enquiry into the Standard of Living of Jute Mill Workers in Bengal* (Calcutta: Bengal Secretariat Book Depot, 1930), 16–17, 20.

33. It was, however, noted that in Bengal, where prisoners were fed almost exclusively on rice, beriberi was rare, suggesting that some other factor must cause the disease: W. J. Buchanan, "Beri-Beri and Rice," *Lancet,* August 27, 1898, 578.

34. D. McCay, *Investigations into the Jail Dietaries of the United Provinces with Some Observations on the Influence of Dietary on the Physical Development and Well-Being of the People of the United Provinces* (Calcutta: Superintendent, Government Printing, 1912), 188.

35. D. McCay, *The Protein Element in Nutrition* (London: Edward Arnold, 1912), 97.

36. Ibid., 149–150; Mrinalini Sinha, *Colonial Masculinity: The "Manly Englishman" and the "Effeminate Bengali" in the Late Nineteenth Century* (Manchester, UK: Manchester University Press, 1995), chap. 2.

37. McCay, *Protein Element,* 171.

38. On anxieties about rice in Bengal, see Srirupa Prasad, *Cultural Politics of Hygiene in India, 1890–1940* (Basingstoke, UK: Palgrave Macmillan, 2015), 30–32.

39. Chunilal Bose, *Food* (Calcutta: University of Calcutta, 1930), 2–3. Bose added that rice was "the poorest of all cereals" in regard to its protein content and deficiency in fat and salts, but was high in energy value and its starch "very easily digestible" (82). He also endorsed the views of McCay and McCarrison on the superior physique of wheat-eating north Indians (83–84).

40. There is an echo of this nostalgic view in Bose, *Food,* 93–94.

41. One example of this was the resurgent belief in the positive moral as well as physiological value of vegetarianism, a position exemplified by Gandhi; see Joseph S.

Alter, *Gandhi's Body: Sex, Diet, and the Politics of Nationalism* (Philadelphia: University of Pennsylvania Press, 2000).

42. For the idea of "braiding," I am indebted to Projit Bihari Mukharji, *Doctoring Traditions: Ayurveda, Small Technologies, and Braided Sciences* (Chicago: Chicago University Press, 2016).

43. David Arnold, "British India and the 'Beriberi Problem,' 1798–1942," *Medical History* 54, no. 3 (2010): 295–314.

44. For the regional importance of this disease, see Alexander R. Bay, *Beriberi in Modern Japan: The Making of a National Disease* (Rochester, NY: Rochester University Press, 2012).

45. Kenneth J. Carpenter, *Beriberi, White Rice, and Vitamin B: A Disease, a Cause, and a Cure* (Berkeley: University of California Press, 2000).

46. Arnold, "British India," 306–311.

47. Robert McCarrison and Roland V. Norris, "The Relationship of Rice to Beri-Beri in India," *Indian Medical Research Memoirs* 2 (1924).

48. Robert McCarrison, "A Good Diet and a Bad One: An Experimental Contrast," *Indian Journal of Medical Research* 14, no. 3 (1927): 649.

49. R. McCarrison, "The Nutritive Value of Wheat, Paddy, and Certain Other Food-Grains," *Indian Journal of Medical Research* 14, no. 3 (1927): 631.

50. Ibid., 638.

51. W. R. Aykroyd and K. Rajagopal, "The State of Nutrition of School Children in South India," *Indian Journal of Medical Research* 24, no. 2 (1936): 419–437; W. R. Aykroyd and B. G. Krishnan, "Diet Surveys in South Indian Villages," *Indian Journal of Medical Research* 24, no. 3 (1937): 667–688; W. R. Aykroyd and B. G. Krishnan, "The Deficiencies of the South Indian Diet," *Indian Journal of Medical Research* 25, no. 2 (1937): 367–372.

52. In 1923 the Madras government explained that milled rice might cause beriberi but not hand-pounded or parboiled rice, adding, "The best way to avoid beri-beri is to use a varied diet containing anti-beri-beri substances and not to restrict the diet too rigidly to machine-milled rice; use home-milled or parboiled rice where possible." Madras, Local Self-Government (Public Health), Government Order 639, April 14, 1923, IOR.

53. S. Ranganathan, A. R. Sundarajan, and M. Swaminathan, "Survey of the Nutritive Value of Indian Foodstuffs: Part I, the Chemical Composition of 200 Common Foods," *Indian Journal of Medical Research* 24, no. 3 (1937): 692.

54. For a somewhat different demonstration of this idea of ownership, see Emiko Ohnuki-Tierney, *Rice as Self: Japanese Identities through Time* (Princeton, NJ: Princeton University Press, 1993).

55. U. N. Brahmachari, "The Role of Science in the Recent Progress of Medicine," presidential address, Twenty-Third Indian Science Congress, Indore, India, 1936, 5–7. For a further favorable assessment of Indian diets, see R. N. Chopra, *A Handbook of Tropical Therapeutics* (Calcutta: Art Press, 1936), 159–199.

56. David Arnold, *Everyday Technology: Machines and the Making of India's Modernity* (Chicago: University of Chicago Press, 2013), 133–140.

57. In 1939 the *Gazette* argued that the consumption of polished rice had not been a serious problem in India as long as it was confined to the wealthier classes who also ate other foodstuffs: the "tragedy" of this practice emerged when it was extended to the poorer classes. Editorial, "Our daily rice," *Indian Medical Gazette* 74, no. 2 (1939): 97–98.

6 | The Good, the Bad, and the Foreign

Trajectories of Three Grains in Modern South Korea

Tae-Ho Kim

In 1935, a newspaper article in colonial Korea declared, in all seriousness, "Polished white rice is poison." It warned its readers that Koreans' appetite for white rice could eventually lead them to beriberi, a dreadful disease of vitamin B deficiency.[1] Seventy years later, in 2005, South Korean national television aired a series of public advertisements titled "Rice: The Energy of Koreans" to promote rice consumption at home. One of those advertisement ends with a close-up shot of a bowl of glossy white rice, freshly cooked to emanate irresistibly appetizing steam.[2] Unlike the newspaper article in the colonial past, the television advertisements did not mention the potential risk of white rice at all; they simply enticed their audience to consume more rice, no matter whether it was processed or not.

What made Koreans in the mid-1930s concerned about the perceived deficiency of white rice, and then in the 2000s made them completely forget its supposed defect? If vitamin deficiency was not the biggest problem with Koreans' diet, what was the real threat? And what made the South Korean state persuade its people to eat more rice?

To answer these questions, this chapter compares the trajectories in modern South Korea of three major grains: rice, barley, and wheat. While rice has always been considered the best of all foods for Koreans, wheat transformed itself from a rare delicacy in the past to the second most important cereal today, although its demands could be met only by importing the grain in large quantities. Meanwhile, barley, once a vital substitute or supplement for rice on South Korean tables, has lost its status and

become virtually nonexistent. I will trace these crisscrossing trajectories within the context of the history of modern agricultural science and technology, which illustrates the dialectics between the global and the local that are at the basis of their attributed changing dietetic values.

Rice, Barley, and Wheat in Premodern Korea

Rice has been the most important cereal crop for Koreans since its introduction to the Korean Peninsula. *Oryza sativa,* commonly known as domesticated Asian rice, is believed to have been introduced to the Korean Peninsula from China. Carbonized rice grains excavated in Sorori, Chungcheongbuk-do, South Korea, in 1998 are acknowledged to have been buried in the late Paleolithic era (between thirteen and sixteen thousand years ago), which makes it the earliest existing sample of rice used as food.[3]

Until the early twentieth century, however, rice was the staple crop for Koreans more in imagination than in reality. Owing to a chronic shortage of rice, common people in premodern Korean society could expect a bowl of glossy, thoroughly polished white rice only on a family ritual day or on national holidays. Nothing could illustrate Koreans' desire for rice more strikingly than a North Korean political slogan, "Rice is socialism," which promised "a bowl of white rice and a bowl of meat soup" as an outcome of the socialist revolution.[4]

As a shortage of rice was not unusual, Koreans developed various alternative food crops to avoid the risk of famine. Barley was the most important alternative, or supplement, to rice for two reasons: one, barley granules could be cooked together with rice without milling, which made it perfectly compatible with the Korean food culture centered on rice, and two, Koreans had found that the double cropping of barley and rice might be a reliable combination in many parts of the Korean Peninsula. One example of the historical importance of barley is the idiom "barley peak" (also translated as "barley hill"), which was familiar to all Koreans until the 1970s. The "peak" meant a critical period in late spring when rice harvested the previous autumn had run out but the spring barley was not yet harvested. If one was lucky enough to survive the barley peak without perishing, then one could anticipate a bountiful harvest in the autumn and another year of subsistence—until one faced the next barley peak. As this idiom implies, barley greatly contributed to the sustenance of Koreans over the centuries.

Other crops, including various kinds of beans and sorghums, were widely cultivated throughout the peninsula as well. Potatoes and sweet potatoes were introduced to the Korean Peninsula in the seventeenth century and soon became important crops in some areas. Beans, mostly soybeans, were also important as the sources of protein in an agrarian society in which meat was generally scarce. All of these "minor" crops could be mixed with rice and barley and cooked together, but they were considered ingredients for side dishes or condiments rather than staple crops.

Wheat, on the other hand, was not a part of the everyday diet of premodern Koreans. Wheat was cultivated in limited area within the Korean Peninsula, and its production was nominal compared with rice and barley. There were native Korean varieties of wheat, some of which were adopted by Japanese agronomists by the end of the nineteenth century and improved to become the Japanese semidwarf wheat variety "Daruma." "Norin No. 10," a modern successor of Daruma, was subsequently adopted by American agronomists as one of the parents for agronomist Norman Borlaug's famous semidwarf wheat of the late 1950s.[5]

For Koreans, however, cooking with wheat was generally considered to be a different, rather than complementary, way of cooking than with rice or barley. First of all, unlike rice or barley, wheat could not be cooked in granules but needed extra preparation procedures such as milling and kneading. In addition, as an oven was not part of the traditional Korean kitchen, baking was not widespread in Korea. A more common way of cooking with wheat flour was to boil or fry dough in various forms. Although several premodern cookbooks had recipes for wheat noodles, they were usually described as special—"foreign," as in "imported from overseas"—items for special occasions, such as a family ritual or a reception of important guests. Even today, wheat flour noodles in warm broth is a common element of a feast.[6] It is not uncommon in a Korean wedding, which is predominantly "Western" in many ways, to include a small bowl of noodles in a French course at the reception dinner.

The Stigmatization of White Rice through Modern Nutritional Science

The dominant status of rice as the staple crop (however symbolic, due to lack of supply and availability) was not challenged even after Korea's encounter with Western modernity in 1876 and subsequent colonization

by Japan in 1910. It is noticeable, however, that there was a subtle but important change in the way rice was perceived and the manner in which the rice shortage was described. While the chronic shortage of rice in premodern Korea was usually described as an inevitable malady owing to a lack of agricultural technology and excessive exploitation by landlords, the language of modern nutritional science (which, since the 1920s, has become the mainstream health discourse) dared to imply that it might not be so lamentable to consume less white rice. According to newly emerging nutritional science, eating other crops as alternatives to rice might not be an avoidable result of poverty but possibly an active choice for improving individual health.

Transplanted Fear of Deficiency Diseases

The warning against white rice that began in the early 1900s was based on contemporary research on beriberi—a syndrome caused by a deficiency of vitamin B1 (thiamine).[7] Beriberi was first researched by the Dutch in Batavia in the nineteenth century and reported to the West as an endemic disease in rice-eating Asian countries.[8] After the Meiji Restoration, Japanese doctors trained in Europe began research on the disease, which was also known as "*Edo wazurai*" (Tokyo disease) in Japan.[9] Takaki Kanehiro, a Japanese naval doctor trained in Britain, was one of the pioneers who noticed in the 1880s that a wider range of dietary choice could reduce the outbreak of the disease. Similar findings were also reported by European researchers, including Christiaan Eijkman (1897), Frederick Hopkins (1898), and Gerrit Grijns (1901). Edward Bright Vedder confirmed that rice bran extract could cure beriberi in the early 1910s. In 1910, Suzuki Umetaro, a Japanese biologist trained in Germany, succeeded in isolating from rice bran the substance that could prevent and cure beriberi. He named it "aberic acid" (later "oryzanin"), but an independent isolation experiment by Polish biochemist Kazimierz Funk in 1912 gained wider recognition, along with Funk's terminology for the same substance, "vitamin(e)."

Once the concept of vitamins was identified, pharmaceutical companies and food producers rushed into this whole new area in the drug market. Suzuki himself patented his "oryzanin"—derived from *Oryza sativa,* the scientific name of domesticated rice—in Japan and commercialized the rice bran extract for the prevention and cure of "beriberi, malnutrition of children, loss of appetite," and also for the provision of nutrition "before and after delivery or illness." Other manufacturers also tapped into the

vitamin supplement market, with a variety of contents and sources: cod liver oil for vitamin A, beer yeast for vitamin B complex, and citric acid for vitamin C, to name a few.[10]

However, one irony of nutritional deficiencies is that they can be so easily cured once they are identified, because the necessary intake of micronutrients is usually so small. Since most vitamin deficiencies can be successfully cured and prevented just by adjusting one's everyday diet, it is in fact hardly necessary to spend extra money to purchase a commercialized product. To prevent beriberi, for example, it would suffice to mix a small portion of brown rice or barley into rice, or to prepare side dishes with vegetables containing vitamin B.[11]

That irony was even more apparent in societies such as that in Korea in the premodern and early modern periods, in which the "excessive consumption of white rice" had virtually never happened. Beriberi was called "Edo disease" In Japan, where patients of the deficiency were found mostly in big cities, where wealthy people could consume polished white rice as much as they could afford. Beriberi was not reported as a serious problem in rural areas, even before the identification of its nature and cause.[12] In early modern and colonial Korea, where rice supply usually fell short of demands, beriberi had never been a nationwide problem. Western missionaries in the late Joseon also reported that, unlike in Japan, they could seldom identify beriberi patients even in Seoul, the biggest city.[13]

Thus it was necessary for manufacturers and vendors to create new needs for commercialized vitamin supplements, to eventually create the market that had previously been nonexistent at all. Promoting fear of vitamin deficiencies that were "discovered" in colonies between the two world wars was the easiest way to create a need for vitamins, although vitamin deficiency was not an eminent threat to Koreans. Since the 1920s, Korean people had seen dreadful images of patients of beriberi, scurvy, and rickets in news, advertisements, and school textbooks. As a result, Koreans were gradually taught about vitamin deficiencies and the necessity of vitamin products as nutritional supplements.[14]

Wartime Austerity and the Mobilization of Nutritional Science

From the late 1930s onward, a growing awareness of vitamins, initially taught by pharmaceutical and commercial corporations, was intermingled with a campaign against white rice by the Japanese imperial state. Since

Japan's invasion of China in 1937, the Japanese government had implemented severe austerity policies throughout the empire. Consumption of white rice was strongly discouraged, and the use of rice for brewing was banned.[15] From the state's point of view, if all civilians and soldiers in the empire consumed only brown rice, the effect would be equal to an increase in the national production of rice by one-third, because about one-quarter of rice grain (by volume) is lost to husking.

The state justified its austerity policy in the name of nutritional science. Officially, the reason to encourage the consumption of brown rice or mixed grains was not to save rice for the frontline but to maintain people's health. Since the 1920s, researchers in Keijō Medical College and Keijō Imperial University had conducted field research on Koreans' diets in different groups, usually in schools and prisons, and analyzed their nutritional balance.[16] Although the research did not explicitly support the propaganda against polished white rice, the implication—especially the finding that other grains could be better than, or as good as, rice in terms of nutritional value—was cited by the colonial authority to justify its policy.

State-controlled media earnestly delivered articles warning of the potential harm of white rice, along with news that the rice saved by schools, corporations, and other groups on the home front was being donated to the frontline. This rice was usually "saved" through a massive *honsik* (mixed-grain diet) campaign, which in effect acted as an extra taxation on the people.[17]

One problem with the sustainability of the *honsik* campaign was that people were forced to compromise their everyday diet. For Koreans, as for most Asian people, white rice was best suited to be cooked whole. Brown rice was stiff, compared to fully polished rice, and hard to digest owing to its husk; barley was generally considered to be acceptable but was far less palatable due to its toughness; beans, widely recommended as a source of protein, were often mixed with rice, but their bulky texture was far from being consonant with the tender and chewy texture of rice. Bean-mixed rice was usually provided to soldiers and prisoners, for it was considered to be the most economical and efficient way to provide protein. The "bean rice" was so much hated in Korea, however, that the idiom "eating bean rice" came to mean "being imprisoned." The colonial authority also promoted other minor grains, including sorghum and millet, but none of these was warmly received.

To respond to the issue of palatability, food scientists developed "artificial rice," starch from various grains milled and processed in a granular shape. Nutritional science was again mobilized for the justification of this new invention.[18] Nutritional scientists published articles on the nutritional value of the artificial rice, claiming that artificial rice was more nutritionally balanced, not to mention more affordable, than real rice.

Whether they believed it or not, people of the Korean Peninsula did not have any other choice, when more than half of the rice production was "exported"; 56 percent of the rice was transported out of Korea in 1942, and 68 percent the following year.[19] In the last stage of the Pacific War, when the demise of the Japanese Empire became apparent, the colonial authority rationed bean cake—residue from soybean oil—as substitute for real rice.[20]

Even after the war ended in 1945, the collective memory of the austerity and mandatory "diversification of diet" continued to influence Koreans in two ways. First, Koreans were exposed to "scientific" discourse that stigmatized polished white rice, whether they believed it or not. Second, the memory of forced austerity traumatized Koreans and made them reluctant to accept "alternative" grains, including "southern rice," the indica rice occasionally rationed during the war.

The Sudden Abundance of Wheat in Postwar South Korea

The PL480 and Influx of American Wheat

Although some Koreans began to cultivate a taste for wheat under Japanese colonial rule, wheat was not an important part of Koreans' everyday diet until enormous amounts of wheat were released in South Korea by way of American foreign aid programs.

The Public Law 480, or the Agricultural Trade Development and Assistance Act, of 1954 was particularly significant in terms of this change. It allowed developing countries to pay for American food imports in their own currencies, instead of using US dollars, and eventually accelerated the influx of American wheat flour into the South Korean market.[21]

In the 1950s and 1960s, American wheat contributed substantially to sustaining Koreans on the verge of famine, but the massive importation of

American wheat in effect eradicated wheat farming in South Korea. The share of Korean wheat in domestic demand dropped sharply from 70 percent in 1955 to around 25 percent in 1958, and later fell even lower. Although one should also consider the big increase in overall demand since the introduction of American wheat, this decline was remarkable and also irreversible. The rush of American wheat also affected rice farmers, because the low price of American wheat prevented the rise of the market price of rice.[22]

Although wheat was still foreign to them, South Koreans in effect had no choice but to embrace it in the midst of the ruins of the Korean War. As bread was too foreign to most Koreans, many South Koreans became acquainted with wheat through dishes that were analogous to existing Chinese or Japanese dishes or could be cooked in Korean ways. Soup with dough-flakes (*sujebi*), noodle soup, and dumplings were introduced into everyday South Korean menus by the late 1950s. *Jajangmyeon,* a localized variation of Chinese noodles with black bean sauce (*zhajiangmian*), was popularized in the mid-1950s and eventually became the most popular family eating-out choice since the 1960s.

The Era of *Bunsik*, with Reluctance and Reservation

The Park Chung Hee administration (1962–1979), which led the rapid economic growth of South Korea, promoted *bunsik* (a wheat flour diet) in the belief that controlling cereal prices was one of the keys to successful economic development. In November 1962, the government launched the "Encouragement of Honsik and Bunsik Movement" as a nationwide campaign. It mandated that all rice vendors and restaurants could not sell white rice, whether raw or cooked, without mixing it with at least one-fifth of other "minor" grains (*japgok*). It also announced that cafeterias in schools and public offices must also mix other grains with white rice.[23] Enforcement became even stricter the following year, when the government banned the sale of any kind of rice product for lunch. All public officers were mandated to have bread for lunch at in-house cafeterias. Since January 1969, every Wednesday and Saturday were designated "*bunsik* day," when no rice was allowed for lunch at all and barley or wheat must be mixed into a quarter of the dinner items at every restaurant.[24] The state also legislated that "*bunsik* centers" should be established in every municipal district, where people could find diverse dishes

made of wheat.[25] To justify these strict regulations, the state again mobilized nutritional science, which asserted that *honsik* and *bunsik* were better for health.

The brewing industry was also forced to comply with state policy to reduce rice consumption. Starting in July 1963, it was announced that every Thursday would be "no-alcohol day," and as of 1964 the use of rice for brewing was completely banned.[26] This regulation became an opportunity for some: *soju* distillers that used potato or sweet potato, such as Jinro, stood out in the market starting in the 1960s, while brewers with longer histories struggled with the regulations.[27]

Meanwhile, since the mid-1960s, a whole new wheat product had begun to entice South Koreans for its convenience, affordability, and, most importantly, familiar taste. Instant ramen, a postwar Japanese invention, was introduced into South Korea in 1963. Samyang Foods imported two ramen-making machines from Myojo Foods in Japan to produce the first instant ramen in South Korea. The company soon changed the original clear, salty chicken soup to a thick, spicy beef soup to appeal to Korean consumers.[28] As this change turned out to be a success, Samyang secured an important share of the South Korean food market.

It took longer for bread to claim its place at the South Korean dining table. As with the Japanese, the breads first experienced by Koreans were "hybrids," such as bread filled with red bean paste or sweet butter cream. The state's consistent support for *bunsik,* however, gradually opened up new space for South Korean bakers. As snacks at first, and subsequently as substitutes for regular meals, bread was provisioned to soldiers, public officers, and schoolchildren, the last of whom developed a particular taste for bread. As a result, by the mid-1970s, "Koreanized" bread could claim itself as a relevant, albeit not the best, choice for a meal.

This slow but steady growth of wheat consumption was supported by nutritional science, in a similar manner as in the 1920 and 1930s. After 1945, home economists in Korea, who had been educated and trained under the Japanese "*kateigaku*" tradition, had to adapt to another tradition: American home economics. In that sense, "*gajeonghak*" in South Korea was a mixture of Japanese and American home economics.

Home economists released reports on the dietetic superiority of *honsik* or *bunsik,* and these were repeatedly cited by mass media and school textbooks. The long-lasting meme in East Asia that Westerners are physically

superior—taller and stronger than Asians because they live on wheat—also survived in South Korea throughout the era of rapid industrialization, and legitimized the increased consumption of the foreign grain.[29]

The "Green Revolution in Korea" and the Unexpected Demise of Barley

Despite all of these efforts by the state to promote other grains and tarnish the prestige of rice, South Koreans' deep-rooted desire for rice could not be mitigated until it was satisfied. In other words, one could not think about "decline" before one reached the peak.

The Self-Sufficiency of Rice, and Its Cost

The "Green Revolution" in South Korea, initiated in 1973 with the promotion of the new high-yielding rice variety "Tongil" (reunification), resulted in a remarkable increase in rice production, which nearly doubled in a decade. In the autumn of 1977, president Park Chung Hee proudly announced the accomplishment of the Green Revolution, citing that the gross domestic production of rice had exceeded domestic demand.[30]

The Green Revolution did not immediately lead to a surplus of rice, however. The increased production was readily absorbed by consumers, who had to suppress their demand owing to various state restrictions. The result was that the growth of consumption sometimes surpassed that of production, even in the middle of the Green Revolution. For example, the growth rate of annual rice consumption per capita in 1974 was 6.5 percent, while that of the domestic rice production was only 5.5 percent. The government tried to harness the exploding demand by implementing even stricter regulations. In 1974, it was announced that the use of rice as a snack ingredient was banned, and rice cake (*tteok*) had to contain at least 30 percent of other grains. The recommended husking rate was also lowered to reduce the possible loss of rice grain.[31] Schoolteachers examining students' lunchboxes every day to confirm that every student's meal contained 30 percent of other grains became a familiar scene in South Korean schools.[32]

With the growing confidence in the success of the Green Revolution, however, the Park administration gradually loosened regulations. When

the administration claimed that the Green Revolution had been accomplished, it had to make its people feel the difference. More importantly, Park's Yushin dictatorship was seriously challenged by the democratic movement in the late 1970s, and a general election was scheduled in 1978.[33] Park's proud declaration of the success of the Green Revolution, followed by the liberalization of rice-wine brewing in December 1977, should be understood in this political context.

The Unnoticed and Unworried Decline in Barley Production

The politicized success of the Green Revolution resulted in an unexpected consequence: the demise of barley as the major crop. The Tongil rice, the agent of the Green Revolution, was a hybrid of the temperate "japonica" and tropical "indica" varieties. Although its yield was substantially higher than existing varieties in South Korea, its tropical genes required that it be sown and harvested later than older varieties. It became a problem for farmers who rotated rice and barley for double cropping, because the late harvest of Tongil could cause them to miss the right time to sow barley.[34] Interestingly, however, this was not a serious controversy: most farmers simply accepted Tongil rice and gave up barley cultivation without hesitation. Although barley had long been considered the second-most-important crop for Koreans, it was out of question for Korean farmers to choose between rice and barley. As long as Tongil could guarantee increased production of rice, and to the extent that it could compensate for the loss of barley, farmers did not stick to double cropping. Urban consumers did not stick to barley either, as they had access to rice in the market. In short, barley never overcame its status as an inferior substitute for rice, and was easily abandoned by both producers and consumers.

The cultivation of barley did not recover its geographical area, or its significance, even after Tongil-brand rice was abandoned by farmers due to environmental problems in the early 1980s. Although the Office of Rural Development ambitiously announced in late 1977 that its next goal, after achieving self-sufficiency in rice, would be self-sufficiency in barley and wheat, it was apparent that the goal could not be achieved. Owing to the impetus of the state system, by the mid-1980s the *honsik* and *bunsik* movement was sustained in rather perfunctory manner, and did not help barley to regain its popularity. Both the demand and the supply of barley

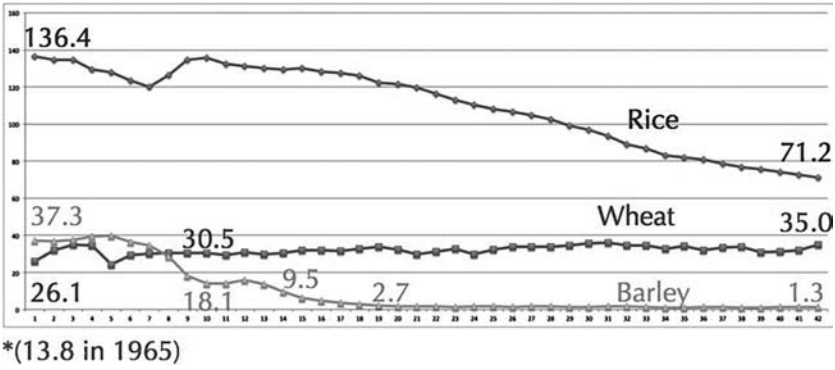
had declined sharply since the late 1970s. The status of barley also changed, from the second-most-important staple crop to an ingredient in nostalgic, and even exotic, snacks. Currently, the majority of barley supply for food is imported from China, a fact that tarnishes its value as the staple crop and illustrates the "moral" nature of grains as defined by their origin. Other demands, mainly from the beer industry, are also met by barley imported from Europe.

Wheat as the New "Second Staple"

While barley lost popularity, wheat became more and more important, far from being abandoned. According to recent statistics, the annual consumption of wheat per capita in South Korea reached 35 kilograms (in 2011), half that of rice (69.8 kilograms in 2012). Compared with the peak in 1982 (156.2 kilograms), the consumption of rice dropped by half within a generation, and a substantial portion of the decrease accounted for the increase in wheat consumption.[35] Now it might no longer be an exaggeration to call wheat the "second staple crop" of South Korea.

Reinterpretation of Wheat as the Prestigious Western Foodstuff

The phenomenon of the "rise of wheat" might be explained by answering two questions: Why has the demand for rice declined? And how could wheat, not any other grain, fill the void? First, the reported "success" of the Green Revolution allowed people to consume as much rice as they wished. Although there were controversies about the quality of Tongil rice, it could guarantee a dramatic leap in quantity, combined with strong state initiatives. The result was a peak in rice consumption in 1982. Once rice reached its peak, however, several forces pulled it down: South Korea's population growth slowed down; rapid economic growth enabled people to diversify their diet by consuming vegetables, fruits, and dairy products; and economic growth and urbanization encouraged people to eat out more often than before. With these factors combined, domestic rice consumption has declined rapidly since the early 1980s, from 156 kilograms (per year per capita) in 1982 to 120 in 1990, 94 in 2000, and eventually below 70 in 2012.



Annual consumption (per capita) of rice, wheat, and barley in South Korea, 1970–2016. Drawn by the author, based on the statistics from "Grain Consumption, per Capita, per Year, 1963–2016," Korean Statistical Information Service, http://kosis.kr.

The second reason for the rise of wheat was the popularization of Western food culture. Although "first-generation" *bunsik* such as instant ramen and *jajangmyeon* had secured their places in South Korean food culture by the early 1970s, *bunsik* was still regarded as the lesser substitute for a "real" meal: rice and side dishes. Understandably, *bunsik* was substantially cheaper than a meal with rice, and was generally considered a light snack, although it had as many or more calories than a rice meal. Even today, Koreans tend to believe that they feel hungry again sooner when they have *bunsik* for a regular meal.

This image of *bunsik* began to change with the introduction of "second-generation" *bunsik,* although those Western items—pizza, pasta, burgers, cake, and "authentic" bread—were not usually referred to by the generic term "*bunsik*" but rather by name.

By the mid-1980s, only a limited number of people who had the privilege to experience Western life had developed a taste for Western food, while the majority of South Koreans had no palate for it. The neighborhoods of American military camps and upscale hotels for foreigners were among the few places where Western food was available. For example, the first Pizza Hut in South Korea opened in Itaewon, in the vicinity of the Yongsan army base, in 1985.[36] The Seoul Olympic Games in 1988 accelerated the liberalization of Western food items in South Korea. To attract more foreign travelers to Seoul, the government eventually opened the South Korean market to multinational food franchises such as

McDonald's (whose first outlet appeared in Seoul in 1989). In addition, overseas travel by South Koreans was liberalized in 1989, enabling the younger generation of South Koreans to experience American and European food in their youth.

As a result of the growing demand for "Western" wheat products, total consumption of wheat grew rapidly, from fourteen kilograms (per year per capita) in 1965 to twenty-six kilograms in 1970, and eventually to thirty-five in 2011. From the beginning, second-generation wheat foods have been received as "Western food" and not as an "inferior" subcategory within Korean food. They were different from first-generation *bunsik* not only in that they were considered more "authentic" but also because they were sold at higher prices than Korean meals. While an ordinary South Korean consumer today might think it unacceptable to pay more for a bowl of Korean-style thick wheat noodles (*kalguksu*) than a regular rice meal, he or she might not be able to resist paying double the price for a dish of pasta.

Ambivalence about the Foreignness of Wheat

The foreignness of wheat is not entirely associated with its cultural halo. As long as it is "foreign," wheat will always be associated with fear as well. Especially when it comes to the issues of risk and safety, the foreignness of a foodstuff is easily interpreted as being synonymous with lack of information and control on the producer's side. The skepticism about imported grains again reinforces the hierarchical status of rice (which is currently troubled by surplus production) as the prime staple of Koreans.

Since the early 1980s, the organic farming movement has gained momentum in South Korea, in collaboration with co-ops in the big cities. Co-op activists recruited new members by acquaintance, and the fear of imported or industrialized food, "tainted with chemicals," was the main rhetoric of recruitment. One of the common tactics for recruiting new members was to demonstrate the potential risk of imported wheat flour. A typical demonstration would go as follows: Co-op activists would prepare two glass jars, one filled with imported flour, and the other with domestic flour. Then they would put several worms into the jars and seal them, and show that the worms in the jar with domestic flour survived longer than the other. This example illustrates how the foreignness of wheat was easily interpreted as a risk. In fact, by the late 1980s, middle-class educated

consumers became well aware of the pesticide issue, and many became supporters of the co-op and organic farming movements.[37] Until today, South Korean consumers have been very receptive of any news of safety issues with imported foodstuffs, and wheat is always on top of the list of foods to be monitored. Recent issues—including debates about the safety of "preharvest" treatments with glyphosate, as well as celiac disease and the "gluten-free" diet, despite the fact that there are very few celiac disease patients among Koreans—are rapidly reported and widely shared as well.

Echoing these safety concerns, some Korean farmers and activists initiated the "Reviving National Wheat Movement," aiming at the search, study, preservation, and cultivation of native wheat varieties, as well as development and propagation of new recipes that would suit these "Korean" varieties well.[38] Although the movement has gained wide acknowledgment from the public, its ultimate goal is not quite clear: What to revive, and to what extent? Should the native varieties be revived to meet all domestic demands? Considering the dramatic change in the status of wheat in modern Korea, the meaning of the phrase "all domestic demands" could have enormously different interpretations. If it means "all domestic demands" in the premodern era, when wheat consumption was minimal, then the Reviving National Wheat Movement could actually achieve its goal, but it might not be relevant as the goal for a social movement. However, if it means "all domestic demands" of the present day, the goal is obviously unachievable. Currently, it is estimated that native varieties or domestically grown wheat accounts for only around 2 percent of the total wheat supply in South Korea.[39]

This issue of foreignness is not exclusive to wheat. "Foreign rice" could be an issue as well, although it is not yet a prominent one. South Korea is supposed to import a specific amount of rice every year as a part of the General Agreement on Tariffs and Trade negotiation. To mitigate public fear and anger against foreign rice, the South Korean government has so far sold foreign rice only to the food industry, not to individual consumers. Still, importation will soon exceed industry demand.[40] Despite widespread concerns—whether grounded or not—of "low-quality and questionable" foreign rice, the South Korean government has just begun to persuade people of the benefit of gradually opening the rice market to individual consumers. Although it is hard to predict at this stage, the debate on foreign rice will be different from that on foreign wheat in a number of ways.

Another Unnoticed Foreign Player

In addition to rice, barley, and wheat, there is another "foreign" player, often unseen, in the contemporary South Korean diet: maize. Maize does not look like a staple food for South Koreans, as it is for Mexicans. Nevertheless, national statistics have shown that the consumption of maize in South Korea is greater than twice that of wheat, meaning that maize, not rice, is actually the most-consumed cereal in South Korea, in terms of gross national consumption.

Maize is not visible to individual consumers, however, because the overwhelming majority of maize is consumed as feed for livestock. To realize the growing importance of this hidden king of cereal, it is helpful to consider the rising consumption of meat and dairy products in South Korea: from 1980 to 2010, the per capita annual consumption of meat products has tripled, from 13.9 kilograms to 38.8 kilograms.[41]

During the 1970s, one of the statistical paradoxes was that of two crossing indices of self-sufficiency. While the state enthusiastically celebrated that it was achieving self-sufficiency in rice, the self-sufficiency of all cereals—rice, barley, wheat, maize, and beans combined—was actually decreasing, to as low as 23 percent in 2013.[42] The key to making sense of this paradox lies, again, in maize: the import of maize was increasing to meet the growing demand for meat and dairy products.

Currently, in the international food market, South Korea is the second-largest importer of maize after Japan.[43] As the domestic production of maize accounts for only around 1 percent of demand, the self-sufficiency rate of the entire cereal is expected to remain low in the near future.

"Good Grain" and "Bad Grain"?

Although rice remains the prime cereal for Koreans, its importance in everyday life has decreased remarkably since the early 1980s. This downturn is even more surprising considering that South Korea in the late 1970s was overwhelmed by enthusiasm for the Green Revolution in rice. However, "foreign" wheat, a grain that was not a major food crop on the Korean Peninsula until the early twentieth century, could eventually become the second-most-important grain in Korean food culture by the end of the century. With ongoing economic growth and increasing encounters with

Western culture, this new wave of wheat products could create a new market for middle- and high-end consumers. Meanwhile, barley, once the second-most-important crop for Koreans, has failed to overcome its stigma as a lesser substitute, and has gradually lost its place in South Koreans' everyday diet. Beans, potatoes, and other "minor" crops have become marginal as well.

The increasing consumption of wheat correlated with a decrease in rice consumption, to the extent that beginning in the late 1990s the South Korean state had to advertise the nutritional value of rice to promote its consumption. An observer in the 2010s in South Korea noticed clashes between the two different sets of values, or moralities, of grain. On one hand, rice is associated with historical and cultural values. Its prime status as Koreans' staple is justified in the name of science, which emphasizes the safety, reliability, and nutritional value of rice. On the other hand, this advocacy of rice illustrates that rice is facing serious challenges, because until the early 1980s there had been no need to "prove" the superiority of rice. Discourses on the virtue of rice were introduced only after the consumption of rice had decreased significantly, in contrast to wheat, which was newly associated with yearnings for a Western lifestyle. Meanwhile, barley, once the second-most-important grain for Koreans, quietly faded into oblivion, as it failed to refashion itself from an inferior substitute for rice into an attractive foodstuff associated with new values. It is also noteworthy that "recommendations" put forth by today's nutritional science are completely opposite to those of the 1960s: what to encourage and what to discourage in terms of nutrition is not determined by "pure" scientific reasoning but by such values as socioeconomic need and cultural identity.

Notes

1. Cheong Deok Geun, "Hayan ibab eun dog i doebnida" (Polished white rice will be poison), *Donga Ilbo,* March 12, 1935. When the titles of cited materials are written in romanized Korean, with English translation in parentheses, they are translated by the author. When only English titles are shown, the translations have been provided by the original author of the cited materials.

2. "Hankookin eui daepyo eneoji" (The energy of Koreans), TV commercial, broadcast in 2005, accessed October 10, 2016, archived at https://www.ad.co.kr.

3. Park Tae Shik and Lee Yung Jo, "A Discussion on the Origin of Early Domesticated Rice in Korea Based on Unhulled Rice (*Oryza sativa L.*) Grains (15,000BP) Excavated from the Sorori Site, *Korean Journal of Agricultural History* 3, no. 2 (2004): 119–132 (in Korean).

4. Kim Il-sung, *Theses on the Socialist Rural Question in Our Country* (Pyongyang: Worker's Party of Korea Publishing House, 1964) (in Korean).

5. Cho Chang Hwan et al., "Origin, Dissemination and Utilization of Wheat Semi-dwarf Genes in Korea," *Korean Journal of Breeding* 12, no. 1 (1980): 1–12 (in Korean).

6. It is also said that the habit of eating noodles at a wedding or a birthday party is to pray for the longevity of the host, symbolized by the long shape of the noodle.

7. For a comprehensive history on beriberi and vitamin B, see Kenneth Carpenter, *Beriberi, White Rice, and Vitamin B: A Disease, a Cause and a Cure* (Berkeley: University of California Press, 2000).

8. Angela Ki Che Leung, "Weak Men and Barren Women: Framing Beriberi/Jiaoqi/Kakké in Modern East Asia, ca. 1830–1940," in *Gender, Health, and History in Modern East Asia,* ed. Angela Ki Che Leung and Izumi Nakayama (Hong Kong: Hong Kong University Press, 2017), 197–201.

9. Alexander R. Bay, "Beriberi, Military Medicine, and Medical Authority in Prewar Japan," *Japan Review* 20 (2008): 111–156.

10. For one example summarizing the status of academic research and commercialization of vitamins in Japan in the mid-1930s, see "Seimei no gensen wo rokuchya to shiitake ni midasu: Bitaminkai no seichi Suzuki Kenkyushitsu" (Seeking the source of life in green tea and shiitake mushrooms: The Suzuki Lab, the holy land of the world of vitamins), *Tokyo nichinichi shinbun,* January 28, 1936 (in Japanese)

11. Bay, "Beriberi," 117–121. In the case of prolonged deficiency, which would eventually lead to a fatal heart attack, a thiamine injection would be a cure. The thiamine shot therapy was developed in the 1930s. See Leung, "Weak Men and Barren Women," 215.

12. In contrast, modernization and urbanization in East Asia resulted in the formation of the working class, who were often young, deprived, malnutritioned, and therefore prone to beriberi. See Leung, "Weak Men and Barren Women," 207–208.

13. Yeo In-Sok, "A History of the Research Department of the Severance Union Medical College," *Korean Journal of Medical History* 13 (2004): 233–250 (in Korean).

14. Michael Worboys, "The Discovery of Colonial Malnutrition between the Wars," in *Imperial Medicine and Indigenous Societies,* ed. David Arnold (Manchester, UK: Manchester University Press, 1988), 208–225.

15. Municipal authorities "volunteered" to reduce the supply of polished white rice, which was indispensable for brewing. See, for example, "Imsi Gak Dojisa Hoeeui Gaechoe: Hanhae Daechaek e Chijung (Provisional meeting of provincial governors: Focus on countermeasures against drought damage)," *Donga Ilbo,* Novermber 2, 1939 (in Korean).

16. Among many, see, for example, Kozaburo Hirokawa, "Metabolism Affected by Change of Diet, from Prisoner's Diet (Mixed Cereals) to Cleaned Rice," *Journal of Medical College in Keijo* 1, no. 7 (1931): 359–383.

17. See, for example, "Sabaegman aegukban eul dongwon, jeolmi undong cheoljeo gido" (Four million mobilized as patriot cadres, for thorough implementation of rice-saving movement), *Donga Ilbo,* October 12, 1939.

18. Joo Young-ha, *Geurim sok eui eumsik, eumsik sok eui yeoksa* (Foods in pictures, history in foods) (Seoul: Sagyejeol, 2005), 214.

19. National Institute of Korean History, "Sikryang siksaenghwal yeonpyo, 1912–1945" (Chronological table of provisions and dietary habits, 1912–1945), Korean History Database, accessed May 15, 2016, http://db.history.go.kr (in Korean).

20. Park Wansuh, *Geu manteon shinga neun nuga da meogeosseulka* (Who ate up all the *shinga?*) (Seoul: Woogjin, 1992), 153.

21. Choi Jun Ho and Jeon Un Seong, "Migug ui 1950 nyeondae daehan, daeil wonjojeongchaeg ui bigyo: Hangug ui hyoyuljeogin ODA jeongchaeg eul wihayeo" (Comparative study on the 1950's aid policy from the United States to Korea and Japan), *Nongeopsa Yeongu* 8, no. 1 (2009): 167–202.

22. Kim Tae-Ho, "President's Rice vs. King's Rice: How the Memory of the Green Revolution in the 1970s Influenced the Consumer's Choice in South Korea's Rice Market," *Sarim* (Historical journal) 57 (2016): 40–41 (in Korean).

23. Ministry of Government Administration, "Migok sobi jeolyak e gwanhan beomgukmin undong jichim" (Guidance for the national movement for reducing the consumption of rice), 1962, article 118-1, file BA0084342, National Archives of Korea, Daejeon, South Korea.

24. Ministry of Government Administration, "Jeolmi undong silsi gyehoek" (Action plan for rice saving movement), 1968, article 37-1, file BA0084548, National Archives of Korea, Daejeon, South Korea.

25. For details of the enforced "movement" of *honsik* and *bunsik,* see Kong Jae-Wook, "'Honpunshik Changny-ŏ Undong' and the Change of Dietary Life under the Period of State-Mobilization System," *Economy and Society* 77 (2008): 107–138 (in Korean).

26. Ministry of Government Administration, "Yaktakju jejo e isseo ssal sayong geumji an" (Proposal for banning the use of rice in brewing clear and opaque rice wine) (1110), 1966, article 19-1, file BA0084479, National Archive of Korea, Daejeon, South Korea.

27. Ines Cho, "Moving beyond the Green Blur: A History of Soju," *JoongAng Daily* (Seoul), October 21, 2005.

28. Kim Hyeon Gil, "Ramyeon wangguk eui wang eun jangsu hadeoida: Hanguk ramyeon 52 nyeon eui yeoksa" (Long-living kings in the ramen kingdom: 52 years of ramen history in Korea), *Kookmin Ilbo,* September 4, 2015.

29. A similar obsession for wheat was shared universally in East Asia. One example is the advocacy of wheat as soldiers' ration by Feng Yuxiang, a warlord in northern China. See Seung-joon Lee, *Gourmets in the Land of Famine: The Culture and Politics of Rice in Modern Canton* (Stanford, CA: Stanford University Press, 2011), 169–174.

30. Kim In Hwan, *Hanguk eui noksaek hyeokmyeong: Byeo sinpumjong eui gaebal gwa bogeup* (The green revolution in Korea: Development and propagation of new rice), (Suwon, South Korea: Office of Rural Development, 1978), 169–171.

31. Kim Du Gyeom, "Ssal jeolyak, hoso eseo gangje ro" (Reducing rice consumption: From persuasion to enforcement), *Joongang Daily,* December 6, 1974.

32. This enforcement actually faced strong criticism, even under the Yushin dictatorship in the mid-1970s; Kim Yong Jeong and Lee Kyu Seok, "Haksaeng dosirak honbunsik gwaing dansok: Seongjeok e banyeong, cheobeol kkaji" (Excessive regulations on *honsik* and *bunsik* with student's lunchbox: Even connected to grading and punishment), *Donga Ilbo,* June 12, 1976.

33. "Je shipdae chongseon gyeolgwa reul bogo" (On the result of the tenth general election), editorial, *Donga Ilbo,* December 13, 1978.

34. Larry L. Burmeister, *Research, Realpolitik, and Development in Korea: The State and the Green Revolution* (Boulder, CO: Westview Press, 1988), especially 55–60.

35. "Grain Consumption, per Capita, per Year, 1963–2015," Korean Statistical Information Service, accessed May 1, 2016, http://kosis.kr (in Korean).

36. Yang Yeong Chae, "Millyeo oneun 'Seoyang eui ipmat': Haembeogeo, doneot, . . . mi jeukseok sikpum Hanguk seo gakchukjeon" (Influx of the "Western taste": Hamburger, donut, . . . competition of American fast foods in Korea), *Donga Ilbo,* May 21, 1987.

37. Ahn Jae Seung, "Suip nongsanmul hongsu sok nongmin, sobija 'Uri Mil Sailligi Undong'" (In the midst of a flood of imported agricultural products, farmers and consumers collaborate on "reviving Korean wheat movement"), *Hankyoreh,* August 25, 1991.

38. See the web site of Uri Mil Salligi Undong Bonbu (Headquarters of the "Revive Korean wheat movement"), accessed September 1, 2016, http://woorimil.or.kr (in Korean).

39. Ko Seongjin, "Haemada mil suip 1 jo, guksan jageupryul eun 1%" (1 trillion Korean won of imported wheat every year, only 1 percent of self-sufficiency rate), *Hanguk Nongeomin Shinmun* (Korea newspaper for farmers and fishers), February 6, 2015.

40. Lee Byeong Seong, Kim Kyeong Uk, and Ko Seongjin, "Ssal eui mirae (1): 20 nyeon gan byeo jaebae myeonjeok 25 an *ha* sarajyeo" (Future of rice [1]: 250,000 hectares of rice cultivation area disappeared in the last twenty years), *Hanguk Nongeomin Shinmun,* January 1, 2016.

41. "Grain Consumption, per Capita, per Year, 1963–2015."

42. "Food Self-Sufficiency (Sileage Included)," Gukka Jipyo Chegye (National Index System), accessed September 1, 2016, http://index.go.kr (in Korean).

43. Kwon Jae Hyun, "Hanguk, suip oksusu 75% reul saryoro" (75 percent of imported maize in Korea is for sileage), *Kyunghyang Shinmun,* August 22, 2012.

7 | Snacking, Health, Modernity

Moralizing Confections in Japan, 1890–1930

Tatsuya Mitsuda

One of the most symbolic events in modern Japanese food history was the report, filed in January 1872, that Emperor Meiji (1852–1912) had become a meat eater. Most historians agree that this political gesture helped to dampen the centuries-old resistance to the slaughter and consumption of domesticated animals, setting off the process by which the Japanese nation, especially within the expanding towns and cities, was speedily converted into a country of unapologetic meat lovers by the 1880s.[1] Much of the impetus for this radical overhaul of the Japanese diet came from the understanding, popularized by leading intellectuals such as Fukuzawa Yukichi (1834–1901), that Westerners derived their superior physique from the eating of meat. Pointing to Western nutritional science, intellectuals argued that meat was not only "essential to growth, health and strength" but that it was also a "significant source of intellectual and moral capacity" because meat contained high levels of protein.[2] Confections, at first glance, appear to have had very little to do with this biochemically inspired moral discourse on meat. It is the chief contention of this chapter, however, that sweets were equally exposed to a powerful, scientifically informed moral gaze: the turn toward meat had, thus, a much broader impact than existing scholarship allows.[3]

Due to the nutritional fact that Western confections contain an abundance of "strong" animal-derived ingredients such as milk, eggs, and butter, while Japanese ones make predominant use of "weak" plant-derived ingredients such as *azuki* red beans, agar-agar, and rice flour, Western

confections were deemed morally superior. Physicians, with the tacit support of the state, made concerted efforts to promote Western-style confectionery (*yōgashi*) as "good" and to convince consumers that Japanese-style confectionery (*wagashi*) was "bad."[4] In contrast to rice, which Francesca Bray shows became a part of the Japanese self, Japanese-style confectionery during the period under review thus increasingly became the "other," while Western-style confectionery became the "ideal self" to which health-conscious Japanese should aspire. Even though Japanese-style confectionery frequently used rice for its chief ingredient, this fact appeared to count for little in processed foods such as confections.

Many of the contributions in this volume are concerned with issues arising from, or in opposition to, a meat-based society. In their respective chapters, Angela Leung and Jia-Chen Fu make clear that China also grappled with a powerful, biochemically informed meat discourse but chose, instead of adopting meat or dairy milk, to follow a different dietary path that embraced vegetarianism and soybean milk because they appeared to fit the country's dietetic traditions better and offered hope of an alternative, non-Western avenue to modernity. One objective of this chapter is to show how Japan's experience with "nutritional modernity" had—with the exception of the 1890s—little room for such alternatives. Based on a nutritional and reductionist reappraisal of the place of sweets within modern society, a biomedically inspired moral gaze sought to discipline the behavior of producers, vendors, and consumers during the early twentieth century. Particularly characteristic of the Japanese experience was the extent to which the fulfillment of nutritional modernity was not enough; it was deemed increasingly important that standards of "hygienic modernity" should also be met.[5] By the late 1910s, "good" confections were, accordingly, those that not only contained the "correct" ingredients but were also produced in the "correct" way, a shift that helped strengthen the impression that, in contrast to Western-style confections, Japanese-style confections, especially cheap ones, were "bad" because of *what* they contained and *how* they were made. Both the implications of such a moralizing drive and its limitations are unpacked in this chapter.

Constructing "Good" and "Bad" Confections in the 1890s

Before confections were subjected to a moral gaze, they first had to become popular, a process helped by the incorporation of sugar in confections

during the seventeenth and eighteenth centuries, transforming many confections into "sweets." Prior to this period, sugar, especially the pure and refined sort, appears to have been exceptional. When Sen no Rikyū (1522–1591) laid the foundations of the Japanese way of tea, the accompaniments that were served with the beverage tended to be nuts and fruits such as chestnuts or persimmons; otherwise, unsweetened *mochi* (rice cakes) or *manjū* (stuffed buns) would be offered. Confections did not normally include sugar because it was prohibitively expensive, and so, on the rare occasions it was included, it was served in small individual helpings alongside tea.[6] When the Portuguese arrived in the mid-sixteenth century, bearing sweets such as *kasutera* (*castella*), *konpeitō* (*confeito*), and *aruheitō* (*alféloa*), the situation changed. One of the first to embrace these so-called *namban-gashi*—literally "southern barbarian sweets"—was the eighth shogun, Tokugawa Yoshimune (1684–1751). His partiality for *aruheitō,* a type of candy, is attested by the preferential treatment he gave to craftsmen who made it.[7] Eventually, *namban-gashi* became a major part of the tea ceremony, which, in turn, inspired the creation of high-end and elaborately decorated confections for both display and gift-giving purposes, the development of which centered on the imperial capital of Kyoto. Very much as in other parts of the world, the amount of sugar used in these confections became an important status marker, a connotation of wealth and an index of power.[8]

During the mid-Tokugawa period, sweet confections remained limited to the upper echelons of society or reserved for special occasions such as weddings or funerals, thanks to the relative scarcity of sugar. Much of the sugar was imported from places such as China by Dutch merchants through the port of Nagasaki, a state of affairs that not only pushed up the price but also presented an economic and political dilemma. Not insubstantial amounts of precious metals had to be surrendered in return, threatening the finances and thus the security of a nation that had only recently developed a sweet tooth. For this reason, Yoshimune ordered the domestic production of sugar, and by the beginning of the Meiji (1868–1912) period, the country was churning out 53,400 tons a year, an amount that certainly helped to meet domestic demand but did not necessarily contribute to making sugar a mass and affordable commodity to the extent that it would lose its revered status.[9] By the middle of the nineteenth century, the taste for sweets had percolated sufficiently down the social strata, with *manjū, dango* (steamed dumplings), *yōkan* (jellied confections), and

mochi becoming especially sought-after, everyday confections. For those who could not afford pure sugar, unrefined brown sugar presented an economical alternative, which found its way as an ingredient into cheap confections that later became known as *dagashi,* paving the road for a mass confectionery culture to emerge.[10]

Against this background, critical voices began to be heard about the way in which confections posed risks to health. For example, the Confucian scholar Nakai Riken (1732–1817) held excess consumption of sugar responsible for many premature deaths.[11] A partiality for confections was a marked feature of the upper classes, he noted disapprovingly, but the lower orders were now slavishly following this fashion. He conceded that sugar, if consumed in small quantities, could be a beneficial drug, pointing to the medicinal uses of the substance. Yet he warned that, if eaten to excess, sugar harmed the body. Despite the moralizing tone of his language, Nakai's intervention was a rare one; it was also a more overtly social rather than a medical critique that focused just on sugar.

More sustained moral criticisms, which depart from a preoccupation with sugar to a concern with other ingredients, are detectable in the Meiji period, a turnaround that can be attributed to sugar's loss of status as a result of increased supplies from abroad. Following the opening up of the ports, the amount of cheap and pure imported sugar encouraged the consumption of confections to levels that, as Penelope Francks has remarked, were behind those of the United States and the United Kingdom "but not strikingly different to those of continental Europe."[12] In 1885, according to one report, over 200,000 people were employed as producers, wholesalers, and retailers in the sector.[13] Such a figure is almost certainly an exaggeration, coming as it did from confectionery merchants keen to show the importance of the trade to the overall economy, but it does help contextualize the developed nature of the confectionery scene.

One of the first physicians schooled in Western medicine to deliver a moral judgment on confections based on the science of nutrition was Tsuboi Jirō (1863–1903), a largely unknown and neglected figure in Japanese medical history.[14] At Tokyo Imperial University, Tsuboi worked under the bacteriologist Ogata Masanori, the first professor of hygiene, and climbed to the rank of assistant professor in 1887. Between 1890 and 1895, he studied under the renowned Bavarian hygienist Max von Pettenkoffer. On his return from Europe, Tsuboi offered his expertise as a judge at various exhibitions, served as a consultant for the army's quarantine service,

taught at the National Hygiene Association, and collaborated with Tōyama Chinkichi at the Tokyo Microbiology Laboratory. In 1899, Tsuboi left the capital to head the College of Medicine at the newly established Kyoto Imperial University, where he worked until his death in 1903. Like many other Meiji medical modernizers, such as the highly influential Gotō Shinpei and Mori Rintarō, Tsuboi belonged to the generation responsible for spearheading "hygienic modernity" in Japan.[15] His premature death at the age of forty-one prevented him from establishing a reputation on a par with his more illustrious contemporaries, but his contribution to the biomedical reframing of confections, however, proved to be profound.

In 1890, prior to his sojourn in Munich, Tsuboi wrote about the impact of confections on the body in the pages of the progressive women's journal *Jogaku zasshi.*[16] In this article, the physician applied the then-dominant Western thinking about the importance of protein to an understanding of Japanese snacks. For this purpose, he went to buy confections from the localities of Tsuruya, Hongō Fujimura, Hongō Okano, and Fūgetsudō—or local confectioners relatively near to where he worked—subjecting them to inspection in his laboratory, upon which he discovered that Japanese confections contained disappointingly few nutrients. This was because indigenous confections were predominately made from plant-derived rather than animal-derived ingredients. His disapproval was quite comprehensive, leading him to issue general warnings about *monaka* (wafers with red bean filling), for example, but he was particularly worried about the candies sold at Tsuruya and *soba-manjū* (rice cakes made with buckwheat flour) made at Fujimura and Okano because they contained very little protein.

Based on this chemical analysis, Tsuboi stripped these confections of identities as "proper food" (*ippan no shokumotsu*), described the harm they inflicted on the digestive system, and concluded that they served "merely to fulfill a fleeting desire [*shikō wo mitasu*]."[17] He also compared confections with alcohol: confections might be less dangerous, both medically and socially, but he warned that sweets were also morally suspect.[18] While in Munich, Tsuboi penned another piece, but this time in the pages of a children's magazine.[19] He expressed concerns about the high demand for sweets—which, he observed, was on a par with what he was witnessing in Europe—and fretted over the excessive use of sugar and the wrong use of red beans (*azuki*), two vital ingredients found in steamed confections.

For Tsuboi, the nutritional value of red beans and sugar was not necessarily low. Both contained, he wrote, a little protein. However, it was when

these ingredients were transformed into confections that their value nosedived. Typically, *azuki* would be cooked, sweetened, and turned into a paste (*anko*), which would be used as filling. Yet the problem with this method of preparation, Tsuboi pointed out, was that it led to a significant reduction in the amount of protein. His solution was to increase the amount of *azuki* and decrease the amount of sugar to produce a healthier product.[20] By applying nutritional knowledge to confection making, Tsuboi proposed, sweets could thus be made to serve a higher moral purpose.

During a similar period, Ishizuka Sagen (1850–1909), known as the father of the macrobiotic diet, also provided a moral assessment that reflected more domestic influences. Coming from a family of practitioners in traditional medicine (*kanpō*), Ishizuka saw action in the Sino-Japanese war as a pharmaceutical officer in the army before he sat down to write his highly popular manual—reprinted twenty times by the 1920s—on "dietary regimen" (*yōjō*) in 1898.[21] Unlike Tsuboi, who embraced Western thinking, Ishizuka took a dislike to Western ideas, especially with regard to the Westernization of the indigenous diet, calling for a return to "traditional eating patterns stressing unpolished rice and other whole grains and organic natural foods like sea vegetables and beans."[22] Critical especially of bacteriology, which was rapidly gaining favor, Ishizuka postulated a more holistic approach than the reductionist framework then in the ascendancy.[23]

Despite his skepticism about Western medical advice, he readily incorporated, as Nancy Stalker has pointed out, "the language of chemistry and Western science" to support his views.[24] Within conventional Western medicine, the three main nutrients—proteins, carbohydrates, and fats—were prioritized; but Ishizuka believed that the neglected minerals—sodium and potassium—were far more important in creating healthy bodies. For Ishizuka the key to the maintenance of health was to strike the right balance between levels of sodium and potassium, a stance that reflected his background in *kanpō,* and this principle was extended to his opinion of confections.[25]

Like Tsuboi, Ishizuka took a generally dim view of confections and moralized about the way in which they negatively affected society. Unlike the main foods, which he termed *seishoku,* snacks were marginal, luxury foods, or *zasshoku,* which people ate "unthinkingly to stave off boredom."[26] Such a situation was also exacerbated, he opined, because confections played an increasingly important social role. Due to the increasingly

competitive nature of society, people bought more and more confections as gifts in order to oil human relationships necessary to making progress in life, which encouraged, in turn, even more conspicuous forms of consumption. Medically, sweets were a problem, he charged, because they robbed the body of blood, weakened memory, and slowed down thinking.[27] Due to the lack of sodium, smooth digestion was hindered, helping increase the risk of snackers contracting diseases such as tuberculosis.

Ishizuka also pointed an accusing finger at *anko.* Products such as *shiruko* (red bean soup), *mochi, anpan* (bread with red bean filling), or *manjū* were problematic because red bean paste contained very few minerals. Western-style confections such as *kasutera,* biscuits, and *bōro* (Iberian biscuits) were equally suspect for this same reason. Both types of confections, he suggested, could be made healthier by adding salt. "As long as the ingredients are natural and the amount of salts has decreased only a little," he argued, sweets could be considered to have positive value.[28]

For Ishizuka, the damage wrought by sweets also depended on region. Places where restaurants and confectioners were prevalent, or urban centers, tended to have populations whose diets revolved more around *zasshoku*. Those places that had few restaurants and confectioners had inhabitants who were generally healthier because they ate more *seishoku*. Such a distinction roughly translated into the degree to which the area had succumbed to a Westernization of the diet. Those places that had taken to Western-style foods stood at more risk from eating sweets than places that continued to abide by a traditional diet based on cereals and vegetables.[29] Because eaters of a traditional diet absorbed sufficient amounts of minerals, they were free to eat confections without fear of an impact on their health.

Both Tsuboi and Ishizuka, writing in the early to late 1890s, thus subjected confections to a similar moral gaze, forcing consumers and producers alike to think more responsibly about the consequences of their actions; but the way in which they did so also displays important similarities and differences. First, both viewed confections as exerting a negative impact on health, but they disagreed about the reasons. For Tsuboi, confections were a problem because many of them lacked the three main nutrients, whereas for Ishizuka sweets were deficient in minerals. Second, both focused on *anko* as the chief ingredient but differed in the solutions they offered. While Tsuboi recommended retaining the high levels of protein that *azuki* contained, Ishizuka was happy with the paste so long as salt was added to the mixture.

Third, both regarded confections as marginal semifoods whose status could be transformed through tinkering with the preparation, but they differed in their views about how these combined with the main diet. Taking a reductionist approach, Tsuboi implied that the impact of confections was uniform and independent of the main diet. Ishizuka, by contrast, assumed a more holistic stance, arguing that the impact of sweets depended on the contents of the main diet. For this reason, specificity of place was important, allowing Ishizuka to make the argument that populations in areas that took in sufficient amounts of minerals with their main meals were less prone to the debilitating impact of confections, while Tsuboi did not see the broader correlation with either rural or urban society in which the lives of eaters were embedded, viewing the act of snacking in rather sweeping terms. Finally, while Ishizuka criticized both Western and Japanese confections, because they both lacked important minerals, Tsuboi came out strongly against Japanese confections, implying a preference for Western confectionery, whose nutritional superiority biomedical practitioners were explicitly to trumpet in later years. By the early twentieth century, as the political regime sided emphatically with Western medical and scientific knowledge, the moral meanings of sweets became less contested, with Tsuboi's biochemical reframing gaining the upper hand.

The Moral Responsibility of Providing "Good" Confections in the Early Twentieth Century

Nowhere perhaps is the ascendancy of biochemistry better illustrated than in the efforts the confectionery sector made when faced with the imposition of the unpopular confectionery tax (*kashizei*) of 1885, the main aim of which was to pay for an expanding army. Rather than choose to employ a holistic defense of what they made, confectioners felt that it would better convince the government if they appealed to nutritional arguments. In 1894, the Association of National Confectionery Merchants thus explained that flour contained nutrients and that sugar helped digestion and raised body temperature; they also argued that the addition of eggs and milk—a reference to Western sweets—further increased the nutritional value of confections: "That is why Europeans eat [sweets] after meals and why they can have health benefits. . . . Confectionery should not be regarded as a

luxury. Nor should it be seen as damaging to health. Placing taxes upon it is unfair and . . . shows prejudice."[30]

One year later, when the Fourth Domestic Industrial Exposition (1895) was held in Kyoto, Tsuboi, who had returned from Germany the previous year, was invited to act as judge. Rather than limit himself to the narrow nutritional arguments of the sector, he took it one step further, expanding on his criticism of everyday sweets to encompass ornamental confections, such as those crafted by the Kyoto makers. He dismissed the emphasis on varieties of color and the handiwork that went into crafting the aesthetic pieces of work. Most of the exhibited confections, he remarked, were too sweet, were obsessed with appearance, used color as deception, and paid scant attention to nutrition. Because of this infatuation with appearance, confections did little to make the products look appetizing.[31] He accepted that ornamental confections might not be meant for eating.

Yet that was no excuse for the use of excessive amounts of sugar and the use of poisonous coloring. By downplaying the fact that confections were meant to be consumed, Tsuboi charged, traditional confectioners lost sight of sweets' central identity as food. For all these reasons, he argued, confectionery makers needed to pay less attention to looks and more to content: it was the chemicals contained in the ingredients that ultimately affected the body. The most important criteria for making "good" confections were nutrition and health. Only once this fundamental condition had been met did aesthetics matter, if at all. That was why decorative confections were "bad."

Much of this moralizing rhetoric attacked the fundamental values on which the worth of high-end confections had rested, thereby inviting traditional confectioners to dispute the moral meanings Tsuboi attached to confections. For Taniguchi Heizaburō, a Kyoto confectioner, the problem with Tsuboi was his one-dimensional, reductionist, and simplistic view. Taniguchi complained that the medical scientist overemphasized the importance of nutrition in the creation of "good" sweets. Tsuboi's insistence on making this one aspect the single most important criterion "to the detriment of all else" represented not only "a major damage to the development of confections but also destroyed hundreds of years of artistic confectionery."[32] Takahama Heibei, another Kyoto confectioner, was equally forthright. He insisted that confections "should be served as tea-food (*chashoku*)."[33] For, as snacks (*kanshoku*), confections had a limited role to support the drinking of *matcha* or *sencha* (two varieties of tea). For

this reason he did not believe taste should be privileged: the confectionery experience was equally about "appreciating shape, color, and beauty."[34]

Redefining confections as something "nutritional" was not only completely unnecessary, it was positively offensive. "Helping to whet appetites by adding milk and eggs," he charged, would only increase the "smell" of confections.[35] Given the use of confectionery as an offering to the gods, he explained, such sweets would offend the deity. Confections had a higher moral purpose, it was thus argued, that took into broader consideration religion, aesthetics, and social relationships—to simplify them to a narrow obsession with the chemicals completely missed the point.

For all his sweeping claims, Tsuboi's biochemical intervention ultimately had limited impact on the moral value of gift giving. In 1916, Sasano Toyomi, the head of Kyōbashi Elementary School, expressed concerns about the increasing numbers of children bringing *anpan* instead of lunchboxes from home.[36] Such a problem needed to be remedied, he felt, by putting pressure on manufacturers. Sasano readily acknowledged that sweet-toothed children could not easily be enticed away from *anpan*. Normal bread (*shoku-pan*), he conceded, was not popular with pupils. That was why he suggested removing sweet red beans and replacing them with something healthier.

Yet, within the same piece, Sasano defended his policy of providing decorative confections to pupils on special occasions. For over seventeen years, he pointed out, the school had engaged in this custom. "Beautifully crafted confections," whose "shape" was "all the same," had been offered to more than fourteen thousand children. He acknowledged that there were objections. Some suggested that these ornamental confections should be replaced with books or other printed material, the educational benefits of which were beyond reproach. For Sasano, however, presenting children with confectionery as gifts was not a problem because they were occasional and instructed children in an important social practice. Presentations took place just three times a year and thus the consumption of sweets hardly threatened the children's health. Nor was it the responsibility of the school to police the behavior of children. The consumption of sweets usually occurred at a time and a place distant from school. Children usually ate after returning home from school. For all these reasons, Sasano felt, there was no problem in offering children sweets. When tied to the socially important act of gift giving, decorative confections thus continued to be "good."

At a broader, quotidian level, however, Tsuboi's intervention stung because the cult of domesticity then in the ascendancy among the middle classes provided fertile soil. Both articles referred to earlier appeared in publications whose main audiences were becoming sensitive to the relationship between women, children, and sweets. In 1899, the Japan Children's Society (Nihon Jidō Gakkai), when it broached the topic of sweets for the first time, pointed to the extent to which adults suffered from stomach-related illnesses, all because of what they had mistakenly eaten during childhood.[37]

Reforming children's dietary habits, especially confectionery habits, was not just important for the sake of the children—it had implications for the extent to which the state could nurture and maintain a healthy adult population. Similar to what Izumi Nakayama argues in her chapter on breast milk, the central role that mothers would play in bringing up future soldiers and workers also included keeping an eye on children's snacks. In the view of the Children's Society, parents, especially mothers, had to resist children's "pestering" (*nedari*) demands for sweets, indicating the extent to which imported ideals of domesticity had handed women the task of policing children's confectionery preferences. They were thus encouraged to think more seriously about the impact of sweets on their children's health. Pediatricians offered advice to this growing group of women. Developing Tsuboi's nutritional emphasis, they focused explicitly on the relationship between sweets and children's health, offering mothers advice on what should be given and what withheld. For pediatricians, sweets themselves were not the problem. Confections were indispensable to the diet of babies and children: they not only helped them keep quiet but, when consumption was supervised properly, the nutrients they contained contributed to healthy growth. Because infants could not adhere to the adult habit of eating three times a day, their nutritional needs had to be topped up through snacking. When eaten correctly, confections were morally "good."

Unlike Tsuboi, whose preferences were implicit, pediatricians during the early twentieth century explicitly recommended Western-style over Japanese-style sweets. One of the first articles to specifically address the relationship between children and sweets, published in 1906, advised that one-year-old infants should be fed wafers, *bōro* (Iberian-style biscuits), and biscuits.[38] Only rice crackers, the journal concluded, were an acceptable *wagashi*. Nagai Iwao, a pediatrician, went further in declaring that

wagashi had little to offer.[39] For Nagai, it was not only rice crackers that were damaging: *yōkan* and steamed sweets were harmful too.[40] "*Kashi* containing sweet red beans, sugar, and agar . . ., should not be given to children," he warned.[41] Imported snacks were recommended instead: lady-fingers, sponge cake, Osborne biscuits, Florida biscuits, rusks, and cream crackers.[42] He also mentioned Japanese makers of Western confectionery. Biscuits, wafers, and bread made by Toyō-seika and Fūgetsudō received his medical blessing.[43] Nagai's judgment was based on their nutritional composition: animal-derived ingredients such as milk, eggs and butter made Western confectionery healthy.[44]

All this is not to suggest, of course, that doctors uniformly agreed on the preference for *yōgashi*. In 1916, Takenouchi Kunpei, an influential pediatrician, expressed his doubts about the supposed superiority of Western confectionery.[45] For example, he took issue with chocolate, which he thought was too stimulating. Chocolate would deprive small children of sleep, and he told mothers to refrain from giving chocolates to children before the age of four.[46] Milk caramel, the other representative Western-style confection, had also to be selected with care.[47] Due to a boom in sales, products were appearing in which spoiled milk had been used. Even so, Takeuchi's warnings did not mean he endorsed *wagashi* instead; his caveat about milk caramel, it bears pointing out, expressed his misgivings about adulteration. His criticism did not extend to casting doubt on the worth of the ingredients themselves. Due to pediatric intervention, the impression emerged that Western confections were intrinsically "good" while Japanese confections were by nature "bad."

Much of the advice contained within child-rearing manuals written by doctors envisioned a degree of parental control over the choice of "good" confections. In reality, however, as children ventured outside the home, supervision became more difficult, sparking discussion about how children should maintain bodily health in view of the social constraints they faced. One debate that played out in numerous women's journals was the problem of *oyatsu*—snacking in between meals. Due to the health policies some households were adopting, some children visiting their friends were refusing to accept *oyatsu,* thereby flouting social etiquette.[48]

One journal, *Children's Friend* (*Kodomo no tomo*), asked: should children, apart from your own, be offered sweets, or should they be withheld?[49] One fundamental problem with *oyatsu* lay in the sparking of interfamilial competition. Children's reports that they had received sweets at their

friends' meant the gesture needed to be reciprocated the next time the friend came to play. For keen families, the act would be repaid with interest: confections would be offered that surpassed what their children had received. Most agreed that the provision of *oyatsu* itself was a laudable act of hospitality.[50] Yet the majority also acknowledged their negative impact on health: "Giving children food with abandon does not serve their interests."[51]

A balance between health and hospitality needed to be struck. One extreme solution was offered by Shimoda Jirō, a professor of education at Tokyo Women's School. He proposed that children should say they had already eaten and were full but that they would gladly accept the sweets to take back home, where parents could inspect the nutritional contents of the *oyatsu* to gauge whether they posed any harm.[52] Most parents, it seems, were unwilling to go that far. When friends came to visit, *oyatsu* should be served, but only when the visit coincided with the time when sweets were usually given at 3 p.m. If visits fell outside this time, hospitality, it was agreed, should be held in check. Entangled as it was with the broader imperative of creating polite children, the *oyatsu* issue presented a dilemma and exposed the limits of biomedical moralization, although it was implied that at visits "good" confections should be offered.

More problematic when it came to enforcing correct ways of behavior was when children themselves were handed complete freedom of choice in an environment in which the moral gaze of families weakened. In 1904, Hara Seiichirō observed the way in which even well-off children could make a mockery of adult attempts to influence their confectionery choices by making visits to the notorious *dagashiya* (small candy stores), where the cheapest kinds of sweets could be bought.[53] He reflected on the time he lived with a family whose three children were sent to the prestigious Peers School (Gakushūin). Picked up after school, the children would dutifully return home in time for *oyatsu* that typically consisted of biscuits and wafers—"good," Western-style confections.[54] Unhappy with these sweets, the children would beg money from their mother and, if successful, would trek across town to the *dagashiya*.

A major problem with this small revolt—apart from the failed parental attempt to prevent children from going to the *dagashiya*—was not only that children would be devouring nutritionally suspect confections but that they would also be exposed to unhygienic surroundings and to "unclean" people. In one scenario, sketched by Sasano, a child, Shintarō, goes out to

buy *dango* (sweet dumplings) with a maid. Chancing upon a *dagashiya,* he manages to convince her to buy him *daifukumochi* (small round rice cakes). What horrified educators such as Sasano was Shintarō's encounter with low-class children cooking up *bottarayaki* (pan-fried batter snacks).[55] Now commonly referred to as *monja-yaki,* a type of pancake, which was cooked and shared on a communal grill, *bottarayaki* posed serious hygiene issues. Sasano warned that middle-class children should not eat such filth: "To adult eyes they are unclean, unhygienic. [They are] eaten from the same grill by several people."[56] For him, the fear was that any one of the ruffians could be carrying germs that could be easily transmitted to children such as Shintarō, who would, in turn, carry them back home, helping to challenge the still fragile notion of "good" confections that had been constructed by adults.

Mothers who had subscribed to the promotion of "good" confections were horrified, and efforts were made to reel children straight back home by making handmade sweets that were both nutritionally and hygienically acceptable.[57] Such was the propensity for children to become bored, however, that mothers needed to constantly come up with newer and more exotic offerings to prevent *dagashiya* from luring children back.[58] Fears of the *dagashiya,* a mounting sentiment in the early twentieth century, thus ushered in a second criterion of "good" confections, namely a clean environment in which sweets would be produced, sold, and consumed.

Characteristic of the moralizing discourses about the proper relationship with sweets was the conspicuous absence of men, apart from, of course, the experts dishing out advice—a point that Nakayama also makes in relation to breastfeeding. More often than not women—considered weak and irrational—were seen as being at risk of failing to act out their roles. Mothers lacked the discipline to refuse to hand over money to children, and maids failed to prevent children under their watch from buying "bad" confections. Opinions about children also assumed they could act as only irrational consumers. In advanced countries such as the United States, it was pointed out, children could be trusted to make the right choices with their money. One report explained that American children based their decision on a correct appraisal of the hygienic and nutritional benefits of sweets. They did not eat "aimlessly like Japanese children," who, it was intimated, bought to satisfy an immediate craving without an awareness of whether what they bought was good or bad for them.[59] Given the weakness of the child consumer, the police instead were expected to

intervene to discipline the *dagashiya,* and affordable Western-style sweets that were "good" for health were increasingly promoted, both of which, as the last section will show, became marked from the late 1910s.

Manufacturing "Good" Confections, Policing "Bad" Confections in the 1910s and 1920s

In 1903, the Domestic Industrial Exposition opened in Osaka, to which 4.6 million visitors—a record number—flocked. Western-style confectioners became, for the first time, a distinct presence: an unprecedented number of *yōgashi*—312 items—had been put forward.[60] Fūgetsudō, the early pioneer of Western-style sweets, was the most conspicuous, presenting around sixty types of biscuits and fourteen types of drops.[61] Morinaga, making an appearance for the first time, exhibited ten items that included chocolate, marshmallow, and nougat.[62] At the end of the event, eighteen confectioners received prizes: Fūgetsudō came away with the Grand Prize; Morinaga was awarded a bronze medal.[63]

Reflecting on the competition, the judges welcomed the fact that "as of late demand for Western confectionery has greatly increased."[64] They also viewed with concern the undue emphasis placed on the nutritional benefits of sweets. "Encouraging the mindless addition of eggs and milk," the head judge warned, "contributes to ruining the product and wreaking havoc with the flavor."[65] Back in 1895, Tsuboi, who appears not to have adjudicated at this particular exposition, had courted controversy with his biochemical approach to sweets at the exposition held in Kyoto. Even though his criticism had failed to undermine the basis of decorative confectionery, the nutritional reframing of sweets clearly had an impact, providing the basis on which *yōgashi* makers could claim superiority in a market for everyday confections that was very much dominated by *wagashi* makers. At subsequent expositions, nutrition remained the most important criterion. As a result, *wagashi* makers gradually shied away from participation, wary of being labeled makers of "bad" confections on account of the nutritional inferiority of their products.

One manufacturer who quickly capitalized on nutritional modernity was Morinaga. Unlike Fūgetsudō, which was a confectioner with traditions that stretched back to the middle of the eighteenth century, Morinaga was founded in 1899, drawing inspiration from American confectionery

manufacturers. At the outset, Morinaga catered to a niche market of foreigners and the well to do but, following the Russo-Japanese War (1904–1905), during which Morinaga made a name for itself marketing confection as gifts for wounded soldiers, its popularity spread, and the company boldly set its sights on the national market.[66] Reflecting the rhetoric of pediatricians, in 1919 Morinaga challenged newspaper readers to think more seriously about the impact of confections on children's health.[67] Buying Western-style confectionery was an act of parental responsibility, it suggested, that had far-reaching consequences for adulthood. Due to the ubiquity of sweets in children's lives, it warned, parents had to take "daily care" over what their "loved ones" put in their mouths.

Morinaga's Western-style confectionery—marshmallows, drops, and chocolate—helped digestion, contained lots of nutrients, and kept well. In 1913, as Morinaga relaunched its milk caramel product, the nutritional message was directed to an adult clientele. By packaging this confection in a cigarette box, the company encouraged adults to snack on its milk caramel as a viable alternative to smoking, emphasizing the health benefits thus: "Eaten regularly [milk caramel] helps alleviate bodily and mental fatigue."[68] Morinaga also reassured consumers that its confectionery had no downsides: "However much you eat you will not suffer stomach complaints" was an oft-repeated phrase that implied that Morinaga's products could be eaten almost in unlimited quantities.[69]

For the increasing number of people who visited Morinaga's factories, the levels of hygiene were also a sight to behold. In 1906, a correspondent for the confectionery trade magazine *Kashi shinpō* went to see what all the fuss was about.[70] Shown around by Matsuzaki Hanzaburo, Taichiro Morinaga's right-hand man, the correspondent was struck by the exacting levels of cleanliness. Prior to setting foot in the factory, everybody had to thoroughly wash their hands. Once inside, he marveled, the place resembled a hospital. Because workers wore white clothes and donned white caps, the men looked like doctors and the women resembled nurses. Even their hands were covered, as these workers, looking as though they were standing at an operating table, proceeded to wrap up chocolate cream with surgical precision. Nothing was left to chance: breadcrumbs, sugar, and other ingredients were prevented from coming into contact with the floor.[71]

Such cleanliness, an image *yōgashi* makers were keen to foster, contrasted starkly with levels of hygiene encountered among *wagashi* makers.

Some of the worst culprits were makers of *dagashi*. In 1900, *Yomiuri shinbun* reported on the small makers clustered around Rukangawa-chō in the Kanda District of Tokyo.[72] Many of these makers operated in cramped and stinking working conditions, and it was not uncommon to witness "craftsmen having dirty hands when they kneaded flour."[73] By the time the sweets, which had been readied for shipment in the morning, were delivered to shops, they had already turned moldy. In 1928 the police took thirty-seven *dagashiya* to court; the following year it investigated six hundred wholesalers/makers. The majority fell short of acceptable hygiene standards.

Problems of hygiene also bedeviled reputable *wagashi* makers. In 1924, following food scares, the police raided the kitchens of traditional *wagashi* makers in Tokyo and announced that four had failed.[74] It was uncommon for *yōgashi* manufacturers to be implicated; *wagashi* makers by contrast needed to be disciplined to prevent "bad" confections from entering the market. Similar to Robert Peckham's chapter on the consolidation of spaces for public markets and slaughterhouses in Hong Kong, public authorities tried to control the unhygienic spaces in which confections were produced and sold.

Nutritional arguments lay at the heart of promoting the snacking of Western-style confectionery as a powerful, purposeful, productive practice, strengthening the impression of *yōgashi* as "good" confections. One of the earliest advertisements to do so was by Nestlé. In 1912 the Swiss confectioner published an advertisement that demonstrated the nutritional value of milk chocolate. In the ad, a boy, Taro, clothed in traditional attire, has apparently made a successful ascent of Mount Fuji, Japan's highest peak. He exclaims, "I've made it at last! Without Nestlé's milk chocolate I would never have done it."[75]

Such associations with outdoor, public leisure activities became a regular trope. In 1914 Morinaga recommended that newspaper readers buy milk caramel as accompaniments on trips, when reading, on trains, at sports events, and at theaters.[76] Later adverts continued in similar vein: playing golf, going out for a stroll, dressing up for the night, picnicking, or spending time on the beach should, *yōgashi* makers suggested, be accompanied by confections.[77] Confections were not only important items of food that enabled the enjoyment of modern leisure activities, however; they were just as important in helping provide energy in the workplace.

In 1926 Morinaga produced an advert for chocolate that depicted workers trying to cope with the solitude and fatigue that came from overwork. That was not a problem, Morinaga assured people, because eating chocolate not only helped solve both issues but also "raised job productivity." A separate advert for milk chocolate depicts a bespectacled businessman. Underneath, the copy reads, "Eat one for mental refreshment. Eat two for increasing strength. Eat three to improve efficiency."[78] Media campaigns thus added a further layer to the meaning of "good" confections. Those that contributed to the development of the nation were "good," those that did not were "bad."

Equally important to snacking on Western-style confectionery were sentiments about hygiene. Prior to the arrival of milk caramel and chocolate, confections were bought separately. Vendors would take them out of containers, weigh them, and wrap them in bags for customers to take away. Some would actually breathe into the bags to make space for the sweets, unaware of the bacteriological risks of doing so. Such interventions were rendered superfluous by the fact that both of these products came individually prepackaged in paper or silver foil. Not only did milk caramel and chocolate inspire confidence because machines at the factory were responsible for wrapping up the sweets before they arrived in the shops; it was also reassuring that alien hands could be prevented from coming into contact with the sweets before they were popped into the consumer's mouth. There was little opportunity for germs to land on the sweet between the time it was first exposed to the outside air and the time it took to enter the mouth. Exchanging a milk caramel with another was not a problem either: so long as it was handed over with the wrapping intact, there was very little risk that germs would transfer. Such a change was, it hardly needs adding, reassuring to hygiene-conscious mothers.

To be sure, *wagashi* makers, sensing competition and demand, tried to respond to the nutritional and hygiene challenge. In 1904, the Hongō confectioner brought out "hygienic *monaka*" (*eisei monaka*), claiming that it had no side effects: "No heartburn however much you eat."[79] In 1919 Iwatsuki-ya, a confectioner located near the Mitsukoshi department store in Tokyo's Nihonbashi District, collaborated with a medical doctor to put "calcium rice crackers" on sale.[80] As these examples show, *wagashi* makers may have been able to improve nutritional levels. *Anko* could be replaced with jam, milk could take the place of honey, and the protein levels in red bean paste could be raised.[81]

Yet they were less successful in claiming improvements in hygiene. Toraya, a major maker of traditional confectionery, viewed with scorn the attention paid to the wrapping (a symbol of hygiene) to the detriment of what was most important (taste) but conceded that, even on this point, *wagashi* was losing.[82] By this time, playing around with the ingredients in an attempt to raise the nutritional value of confections was not enough. Rather, to be considered "good," confections also needed to be manufactured in a hygienically acceptable environment. For the small and local businesses that overwhelmingly characterized the sector, this was harder to implement. Heavily capitalized corporations such as Morinaga and, later, Meiji, whose automated production facilities were predicated on serving a mass, nationwide market, stood at a distinct advantage, and the vast amounts of money sunk into media campaigns promoting the image of spotlessly clean factories no doubt reinforced public perception that what they were purchasing was "good."

The Limits of Moralization

In 1917 Miwada Motomichi (1870–1965), a proponent of girls' education, wrote in the pages of the trade journal *Wayōgashi shinbun* about the significance confections had recently acquired.[83] At the beginning of the century sweets had been nothing more than a tool to "stave off whining children," and the wider moral consequences of doing so had not kept him awake at night. Following scientific and medical reappraisals he realized that such an act had broader implications. Sweets were vital to children's development; parents needed to pay more attention to the impact of confections on their children's bodies; and confectioners could no longer evade responsibility. Previously, the aim of sweet giving had appeared harmless, and defeatism had pervaded attitudes to sweet makers. Due to a growing awareness of the importance of nutrition and hygiene, however, a more concerted drive to differentiate between "good" and "bad" confections was necessary.

Prior to the turn of the century, two competing moral visions, whose frameworks derived from domestic and Western thinking, had vied for attention. Both agreed that indigenous confections were a problem but disagreed about what should be added to increase the moral value of sweets. Eventually, the biochemical framework won out, not least because of its affinity with the prevailing health regime and its appropriation of the cult of

domesticity then in the ascendancy. By the early twentieth century, pediatricians were explicitly calling for children to be given more *yōgashi* than *wagashi* because of the nutritional superiority of the former; experts at expositions judged, based on nutritional criteria, that "good" confections contained animal-derived ingredients such as milk, eggs, and butter; and large companies of Western-style confections such as Morinaga aggressively marketed their products as healthy because of the nutrients they contained.

During the 1910s and 1920s, as the popularity of Western-style confectionery increased, the way in which confections were produced also became important when differentiating between "good" and "bad" sweets. Hands came less into contact with *yōgashi,* manufactured as it was in spotlessly clean factories with the aid of machines. By contrast, *wagashi* appeared unhygienic: the risks of exposure to germs, adulteration, and food poisoning seemed greater, especially in the *dagashiya,* to which children flocked. To qualify as "good," not only should confections contain the "correct" nutrients but they should also be made the "correct" way. Those that did not meet these criteria were "bad."

Much of this biochemical moralizing had its limits. Despite criticism of ornamental sweets, the custom of gift giving proved hard to dislodge, and children's preferences, especially away from home, were difficult to control. Not only did children refuse supposedly superior Western-style confectionery on offer; they also persuaded parents to hand over money so that they could leave home to buy sweets at the *dagashiya,* where, to the horror of increasingly hygiene-conscious mothers, children roamed around in dirty surroundings and mingled with hygienically suspect children. Even though steps were taken to discipline *wagashi* makers and vendors of *dagashi,* continued reports of police raids during the period under review suggest the difficulty of holding them accountable to higher hygienic standards. More revealingly, traditional *wagashi* makers themselves were disinclined to accept a biochemical and reductionist view of sweets, fiercely asserting that "good" confections were also those that served religious and aesthetic aims rather than just heightening bodily performance. For a country in the throes of modernization, however, such an alternative view failed to influence the biochemically dominant moral discourse on sweets, which insisted on the "goodness" of Western-style confectionery. No doubt this was because the nutritional and hygienic ideals it embodied meshed with the direction the country was taking and the kind of society it wanted to be.

Notes

My profound thanks to Angela Leung, Melissa Caldwell, and Lawrence Zhang for the extensive feedback on previous drafts.

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2. Cwiertka, *Modern Japanese Cuisine,* 33.
3. "Confections" will be used as a broad term to refer to food that did not form part of meals. "Sweets" will be used in a narrower sense to refer to confections that were sweetened with sugar. "Snacks" and "snacking" will refer to confections consumed in between meal times and to the act of eating confections either on the go or at liminal points in time. "Confectionery" will be employed as a collective noun for all types of confections, and "confectioner" will refer to those who make them. Many of the terms and definitions used in this essay are based on usage in Darra Goldstein, ed., *The Oxford Companion to Sugar and Sweets* (Oxford: Oxford University Press, 2015).
4. *Wagashi* and *yōgashi* are terms that entered the vernacular following the rise in popularity of Western confectionery, and will be used for the period after 1900. Before this time, they will be referred to as "Japanese confectionery" and "Western confectionery," respectively.
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8. Sidney W. Mintz, *Sweetness and Power: The Place of Sugar in Modern Society* (London: Penguin, 1985), chap. 4.
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12. Penelope Francks, "Inconspicuous Consumption: Sake, Beer, and the Birth of the Consumer in Japan," *Journal of Asian Studies* 68, no. 1 (February 2009): 150.
13. Kobayashi Gisaburō, *Kashi gyō 30 nenshi* (Tokyo: Kashi Shimpōsha, 1936), 113.
14. For more, see Izumi Hyōnosuke, "Eisei gakusha Tsuboi Jirō no keireki to gyōseki," *Nihon igakushi zasshi* 38, no. 3 (1992): 401–431.
15. Rogaski, *Hygienic Modernity,* 149.
16. "Nihon no kashi," *Jogaku zasshi* 194 (1890): 536.
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19. Tsuboi Jirō, "Kashi no setsu," *Nihon zenkoku shōgakuseito hissenjō* 2, no. 9 (1892): 8.
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22. Nancy Stalker, "The Globalisation of Macrobiotics as Culinary Tourism and Culinary Nostalgia," *Asian Medicine* 5, no. 1 (2009): 10.

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24. Stalker, "Globalisation of Macrobiotics," 10–11.
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26. Ishizuka, *Tsūzoku,* 64
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28. Ibid., 67
29. Ibid., 69.
30. Kobayashi, *Kashi,* 171–172; Ikeda, *Nihon yōgashishi,* 504.
31. Taniguchi Heizaburō, "Kashi shinsa no hōshin ni tsuite," *Hana Tachibana* (1900): 14–15, 15.
32. Ibid.
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55. Sasano Toyomi, *Kodomo no shitsukekata: Ichi Mei Ikuji Kempō* (Tokyo: Hattori shoten, 1907), 150–151.
56. Ibid., 150.
57. *Yomiuri shinbun,* September 21, 1913, 5.
58. *Yomiuri shinbun,* June 7, 1910, 6.
59. Mori Kitarō, "Beikoku no kashi to kashiho no jyōkyō," *Jitsugyō Seinen* 3, no. 6 (1909): 6.
60. Ikeda, *Nihon Yōgashi,* 704.
61. Ibid.

62. Ibid.
63. Ibid., 699.
64. Quoted in Ikeda, *Nihon yōgashishi,* 705.
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66. *Asahi shinbun,* November 30, 1904, 5.
67. *Asahi shinbun,* April 7, 1909, 3.
68. *Asahi shinbun,* December 10, 1914, 3.
69. Morinaga Seika Kabushikigaisha, ed., *Morinaga 55-nen Shi* (Tokyo: Morinaga Seika, 1954), 208.
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71. Mori Kitarō, "Beikoku no kashi to kashiho no jyōkyō," *Jitsugyō shōnen* 3, no. 6 (1909): 5.
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80. *Yomiuri shinbun,* September 10, 1919, 6.
81. "Kashi chōwa ron," *Kashi shinpō,* April 15, 1907, 1; [Mrs.] Murai Gensai, "Okashi no zenaku," *Shokuyō zasshi* 8, no. 70 (1913): 52.
82. Kurokawa Takeo, "Yōka ni osare gimi na wagashi no tameni," *Jigyō to kōkoku* 6, no. 4 (1928): 29.
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8 | Bad Meat

Food and the Medicine of Modern Hygiene in Colonial Hong Kong

Robert Peckham

Through the late 1880s and early 1890s, there was a "shrieking public agitation" in Hong Kong to clean up the colony's filthy markets and to put in place "stringent regulations" on the importation and sale of "dead meat."[1] Panic-stricken accounts of Chinese sellers touting spoiled foodstuffs filled the newspapers.[2] As the *China Mail* declared in an 1892 editorial, "It is absolutely necessary that steps should be taken to put an end to a traffic which is full of danger to the health of the community."[3] Against this backdrop of mounting colonial anxiety over the safety of consumables, there were renewed efforts to control food pathways. Existing legislation was overhauled, new ordinances were introduced, and hygienic spaces were constructed to facilitate sanitary surveillance.

Authorities in Hong Kong were preoccupied with healthy food from the late 1860s through the first decades of the twentieth century. A new dairy farm, slaughterhouse, and market were built with the explicit purpose of countering the threats posed to health by tainted food products, namely milk and meat. In 1900, the colonial veterinary surgeon declared, "The effectual supervision of the food supply of the Colony appears to me to be one of vital importance to the health and wellbeing of the community."[4] The reorganization of milk and meat production along quasi-industrial lines created new "spatial arrangements" and "nutritional geographies" that reflected colonial assumptions and priorities.[5] As Tatsuya Mitsuda argues elsewhere in this book, by the early twentieth century food had become central to hygienic thinking, as "a biomedically inspired moral gaze sought to

discipline the behavior of producers, vendors, and consumers." Debates about the superiority of modern Western foodstuffs in Japan extended to the critical questions of how, where, and when food was consumed.

While this chapter deals with similar issues at a similar moment, in other respects its focus is wholly different. Hong Kong was, after all, a British crown colony. Out of a total population of some 284,000 in 1901, the European and American civilian community constituted a minority of 6,431.[6] The emphasis on health and hygiene in Hong Kong assumed distinctly racial overtones. A modernizing drive, evidenced in the construction of new linked sites of animal food production, sought to regulate insalubrious "native" behavior and redirect local foodways. While the aim was to safeguard the health of the colonial community, such infrastructural works and associated legislation also had a clear pedagogic directive: to inculcate in the Chinese new hygienic methods of processing, selling, and consuming food.[7]

Tainted Consumables

By the beginning of the twentieth century, oversight of food—together with the prevention and control of infectious diseases—had become a critical marker of effective governance. One of the central arguments in this chapter is that regulation of the food system was not a by-product of colonial rule. On the contrary, strategies of sanitary control, which were initially deployed in a food context, provided organizational models that could, at least theoretically, be extrapolated to deal with the toxic fallout from other pathways. The specialized spaces and methods developed to process and treat animals, for example, could be repurposed to deal with human epidemics. During the plague outbreak of 1894, the newly constructed slaughterhouse was requisitioned as a temporary hospital, throwing into relief the inadequacies of the colony's medical facilities. The slaughterhouse hospital was extolled by James A. Lowson, acting superintendent of the Government Civil Hospital, as "a building well suited for the occasion, with brick walls, concrete floors, fairly good ventilation, and easily kept clean." The old cattle depot, Lowson argued, would have provided an even better medical venue, since it was equipped with excellent drainage and floors, as well as "magnificent ventilation, [and] long stalls, which would have made splendid wards."[8]

The striking architectural similarities between the Bacteriological Institute (1906) and the Central and Western Markets (1895 and 1906),

which are characterized by distinctive polychromatic brickwork, intimate the institutional continuities that existed between medical research and food supply. Yet, while the role of medicine as a "tool" of empire has been extensively studied, the importance of food networks for colonial—and, indeed, imperial—governance has tended to be sidelined, perhaps because food as an object of historical analysis has too easily blended into the background, furnishing little more than contextual detail. A key aim of this chapter is thus to show how an analysis of shifting attitudes and policies toward food may help to elucidate evolving forms of governmentality.

In Hong Kong, the Chinese proclivity for selling and eating "bad" food had long been taken as proof of moral and physical inferiority. Colonial attitudes in Hong Kong resemble those discussed in this volume by David Arnold in the context of British India, where colonial concerns with the toxicity of indigenous foodstuffs or "surrogate" foods pivoted not only on the foods themselves but also on the deleterious social and material conditions of the colonized. As Arnold observes, "The physical nature of food, and the volume and quality of the different foods consumed, was taken by the colonial regime to be an invaluable index of the overall state of Indian society and of its poorest and most vulnerable members." Although Arnold deals principally with rice, meat constitutes an important, if latent, dimension of his argument, since the nutritional shortcomings of rice-dominated, plant-based Asian diets were frequently pitted against the benefits of a "healthy" Western appetite for meat.[9]

In contrast to many of the other contributions to this book, the predominant focus in this chapter is on milk and meat, as opposed to rice—and related grains—or sugar and sweets. Given that meat involves the slaughtering of animals, its production raised a host of moral and humanitarian concerns. Meat was particularly prone to putrefaction and associated with forms of apparent disease-causing or disease-carrying decay and contamination. "In the tropics," the physician James Cantlie declared bluntly in a public lecture delivered before the Hong Kong Literary Society in 1890, "we have to contend with bad meat."[10] As the *Times* journalist George Wingrove Cooke had observed three decades earlier: "In Hong Kong and Shanghai, a dinner table in the summer season is a melancholy spectacle of spoiled food. The creatures to be eaten were necessarily killed the same day, and the tough tissues are as hard as death stiffened them."[11]

"Good" meat was linked to European selfhood, identity, and masculinity.[12] As the American neurologist George Miller Beard declared in his

book *Sexual Neurasthenia* (1884), plants, cereals, and fruit occupied a lower evolutionary echelon than meat. According to this schema, "rice-eating Hindoo and Chinese and the potato-eating Irish peasant" were several rungs below the "well-fed English," a nation of vigorous "beef-eaters." As Beard concluded, "If [a] man must restrict himself to one kind of food, that should be fresh meat of some kind; and on this alone it is possible to maintain not only health but high-working capacity both for brain-workers and muscle-workers."[13] Western physicians and nutritionists accentuated the importance of "good" meat as opposed to "bad" meat. Lean meat was preferable to fatty meat, which was deemed a "relatively lower form of organism."[14] The advent of canning and later the widespread adoption of mechanical refrigeration from the 1890s created new methods of delivering food to consumers around the globe. Progressively, "freshness" became an expectation of the marketplace.

An emphasis on the importance of a protein-rich diet as a source of vitality overlapped with growing humanitarian concerns for the welfare of animals and an opposition to inhumane methods of butchering. Dairy, slaughterhouse, and market formed part of a taming of the natural in what might be called a concerted colonial "civilizing process."[15] A Society for the Prevention of Cruelty to Animals was founded in Hong Kong in 1903 with governor Henry Blake as the society's first president. At the society's inaugural meeting at City Hall, the businessman Edbert Ansgar Hewett observed, "A trade in cattle, even at the best, must result in much suffering to poor beasts, and the trade here in both cattle and pigs is no exception to this rule." New legislation was important, Hewett noted, but not in itself enough; what was necessary was "constant surveillance" to ensure the law was systematically enforced.[16]

Although the modest scale of food production in Hong Kong contrasts with the much more ambitious and costly schemes in other British colonies, above all on the subcontinent, colonial views on native food in Hong Kong represent a pattern of repugnance, intervention, and regulation not uncommon across the imperial world in this period. Similar developments are apparent in Calcutta and Bombay, where fears hinged on cholera, typhoid, milk, and water-borne diseases, and latterly bubonic plague. In other ways, however, Hong Kong was distinctive. It was a small island colony with a large Chinese population abutting an expansive Qing Empire. Unlike many imperial port cities, Hong Kong was almost entirely dependent on imported food.[17]

Indeed, as a major imperial trans-shipment hub, Hong Kong provides useful insights into how colonial responses to the vulnerability of extended food pathways intermeshed with worries about the risks to the port city's security presented by the interregional and global dispersal of people, merchandise, and animals.[18] Although there may have been a "shrieking public agitation" against the filth of local food production and the importation of tainted consumables, Hong Kong was a port city predicated on "free" trade, and even minimal state intervention prompted resistance from vested private interests. Attempts to regulate food in Hong Kong, differentiating the "good" from the "bad," can thus help to further our understanding of the fundamental incoherencies—born out of a tension between state priorities and the dictates of business—that informed colonial public health at a moment when new scientific approaches were gaining ground.

Hygiene and the Regulation of Food

Colonial anxieties about the contamination and deliberate poisoning of foodstuffs came to the fore during the Second Opium War (1856–1860), when the European community was apparently targeted in a murderous plot. In January 1857, bread from the Esing Bakery on Queen's Road was found to be laced with arsenic. In the event, some four hundred Europeans were taken ill, and the wife of the governor, Sir John Bowring, allegedly died from poisoning.[19] The Esing Bakery incident underscored the vulnerability of expatriate households, who were dependent on local Chinese cooks and servants for the preparation of their food. As in other colonial contexts—notably in India after the 1857 rebellion—this reliance, and the demographic asymmetry between colonials and natives, induced general panic. These concerns converged with sanitarian anxieties about the contagious properties of dirt and, from the 1870s and 1880s, bacteriological science, which increasingly espoused the role of "filth germs" in the degeneration of food.

Chinese food preparation and culinary practices were held to be particularly unhygienic. Fears of tainted food radiated out concentrically from the precinct of the domestic kitchen to the broader environment of the colony, and still further afield to the often distant locales from which imported goods—including cattle—originated. Chinese cooks and

houseboys could not be entrusted with the unsupervised preparation of food. Gardeners were feared for spreading disease by fertilizing their fields with human waste. Chinese food purveyors and hawkers were likewise viewed as sources of contagion. And fetid Chinese marketplaces were regarded with revulsion.

A common motif in colonial reports was the dissolution of boundaries that resulted from Chinese food-related activities. Distinctions between public and private spaces collapsed, posing threats to the social order: from the intrusive yelling of hawkers to the disposal of night soil in communal areas, and the use of marketplaces as temporary dwellings. Enclavist arguments about the need to segregate Chinese and European communities to safeguard the health of the latter from the threat of pollution posed by the former coexisted with an appreciation of the impracticability of policing boundaries and the consequential need to expand the scope of public health. An emphasis on assuring a safe supply of fresh food for Europeans overlapped with a drive to "civilize" local food production. Not only were Europeans dependent on the Chinese for some food supplies, but Chinese workers were inevitably central to the preparation of many European foods. Thus, while food functioned as a racial marker, it also underscored potentially toxic interdependencies.

Notices pervaded the Hong Kong newspapers announcing the apprehension of Chinese criminals responsible for the sometimes fatal adulteration of foodstuffs. From the 1860s, in particular, there were mounting calls for a more comprehensive and integrated system of food inspection to safeguard consumers from the effects of putrid meat and fish, as well as contaminated milk, not to mention water.[20] An Order and Cleanliness Ordinance promulgated in 1866 forbade residents from keeping pigs "or other animals likely to be injurious to the public health" within the confines of the city without a license. It also prohibited the sale of "tainted, noxious, adulterated or unwholesome liquor, meat, provisions, condiments, or other article of food" in the colony, with offenders liable to a fine or imprisonment "in default of payment."[21] The emphasis in official correspondence was on bypassing polluting Chinese pathways and on reforming aberrant behavior. Concerns about food contamination were linked to worries about cholera and other communicable diseases, with a subargument that stressed the cost benefits that increased efficiency would bring.

Environmental conditions converged with cultural propensities. Dr. Philip B. C. Ayres, appointed Hong Kong's colonial surgeon and

inspector of hospitals in 1873 with responsibility for the sanitation of the colony, reported on the squalor of the Chinese quarters in 1874, following two house-to-house visitations. Ayres was appalled to discover that goats and cattle lived in close proximity to humans and that "pigs were kept in houses all over the town, by hundreds, and that pigsties were to be found under the beds and in the kitchens of first, second, and third floors."[22] The public markets, he observed, "were places of the filthiest description, even those in use for Europeans; coolies slept with their lousy bedding on the stalls where meat, fish, vegetables, &c., were exposed for sale during the day, and during the day the lousy bedding hung up over the stalls where the provisions were exposed for sale." Ayres noted, in particular, the ways in which meat was produced and stored, as well as the grimy condition of the local "dairies." A Chinese establishment that supplied milk to European houses on Caine Road made use of the basement of a dwelling on Shelley Street and Peel Street. A dominant theme in such descriptions is the breakdown of boundaries, and the lethal mélange that results. "I found in one case," Ayres wrote, "a fore quarter of beef hanging up over the bed of a man in the last stage of small-pox."[23]

Ayres's accounts from the 1870s anticipated the report of the sanitary engineer Osbert Chadwick (son of the eminent sanitarian Edwin Chadwick), published in 1882, which similarly warned of the threat posed to the colony's public health by Chinese living arrangements. Chadwick specifically noted the unhealthy contiguity of Chinese cookhouses with latrines and open sewage.[24] Slum tenements in the poor Chinese districts were constructed with "narrow apertures more like rat-holes than anything else" and had "less room than there is in a rabbit-burrow."[25] There, "men, women and children [herded] together" in a manner resembling the livestock they lived among. Newspaper reports reinforced such views and, following Ayres and others, the state of the Central Market was invariably denounced as a "dirty hole" that lacked urinals and working closets, and where "the stalls . . . [were] occupied as dwellings" with over twelve hundred natives sleeping "nightly where our food is handled and sold."[26]

Chadwick's findings led to creation of a sanitary board in 1883 and to the passing of the 1887 Public Health Ordinance. These state-sponsored initiatives demonstrate how colonial medicine was, as Arnold puts it, "able to move out of the enclave of European need and European agency to which it had hitherto been largely confined."[27] From the 1880s, there was also a new government focus on the connection between human and

animal health. A concern for healthy food informed the work of the colonial surgeon and—from 1890—the colonial veterinary surgeon. In 1887, Charles Vivian Ladds was appointed inspector of livestock and markets, a title subsequently changed to colonial veterinary surgeon in 1890.[28] From the 1890s, Ladds submitted annual veterinary reports, and from 1892 he directed the Vaccine Institute. He was also one of the main proponents advocating for the establishment of a bacteriological laboratory.[29]

The scope of the sanitary board, colonial surgeon, veterinary surgeon, and surveyor of public works often blurred as health was progressively extended to include broader environmental and infrastructural questions. This expansion coincided with the increasing specialization of services. While the expertise of government agents became more strictly defined, the state's responsibilities enlarged. As a colonial concern, "food" was situated on the interstices of all government departments, raising issues that pertained to the colony's economy, urban planning, social order, and health, both human and animal. Food thus brought to the fore not only the question of where the state's remit began and ended but also how its operations were to be optimally organized.

Cowboys in the Tropics: The Dairy Farm Company

At least from the 1860s, the "nefarious" milk trade—in particular the "custom of watering milk" by profiteering milkmen for "ill-gotten" gains—became a critical preoccupation in Britain and her colonies, fueling debate among government and public health officials, as well as medical professionals.[30] Milk was perceived to be an indispensable food at the same time as it was understood to be a source of infection. The connection between disease and milk was reinforced following the identification of the mycobacterium tuberculosis by Robert Koch in 1882. As Michael Worboys has noted, the campaign against milk contamination by medical officers of health in Britain in the 1870s gained new momentum after Koch's breakthrough.[31] Bacteriological research suggested that raw cow's milk "was not uncommonly a vehicle for the transmission of infectious disease," such as typhoid, scarlet fever, and diphtheria.[32]

If the linkage between milk and infectious disease had become entrenched by the 1880s, the connection between infected animals and

"bad" milk was also being made.[33] Policy began to shift from "'inclusive' methods, such as cleaning up dairies and milk distribution" to "'exclusive' methods that targeted infected animals or their produce."[34] The emphasis turned to preventative strategies aimed at extricating milk—as one commentator put it—"from contact with those particles of contagion by which modern sanitary science has shown it to be particularly liable to contamination."[35] Reports on milk's ability "to absorb deleterious matters" (to "lick up the dust," as one report put it) and "the terrible power possessed by an impure supply of disseminating disease broadcast" pervaded metropolitan newspapers, journals, books, and reports.[36] There was an impetus to develop novel sanitary practices to ensure a pure milk supply and the regulation of milk traffic. As an editorial in the *Lancet* noted,

> The fact is, the production of milk has for too long been carried on in a rule-of-thumb way. Now, however, that it is known that milk is one of the most powerful factors amongst us as a carrier of disease it becomes incumbent upon all milk-producers upon their part to ensure, as far as possible, the supply of milk about which no suspicion can be reasonably entertained.[37]

Playing into these bacteriological concerns about milk's susceptibility to contamination was a constellation of other anxieties centered on "purity" and the risks of "adulteration."[38] Debates about milk production and consumption foregrounded concerns about the attenuation of social relations—in particular, the end of traditional farming practices, the erosion of a domestic order, and the weakening of the social fabric, which were a perceived consequence of rapid urbanization and industrialization. As cities expanded, the provision of fresh milk became increasingly problematic. Lengthening communication lines jeopardized security. In the words of the Fabian, F. Lawson Dodd, author of the pamphlet *Municipal Milk and Public Health* (1905), attention was "daily being more and more directed to the supply of food to the people." In what was to become a commonplace refrain of the late nineteenth century, the milk supply was likened to the water supply—"a prime necessity" that was similarly "liable to pollution."[39] To deal with the risks posed by a distended supply chain, new models of hygienic production were championed, in particular the system pioneered by the Aylesbury Dairy Company, which was founded in Bayswater, London, in 1865. Aylesbury Dairy developed a comprehensive inspection system with model hygienic dwellings and the

rigorous cleansing of milk cans and churns, cows' udders, and milkers' bodies and clothes to ensure that the milk remained untainted by any corrupting influence, including dangerous sewage gases.

At the "edge" of empire, too, in the quasicolonial settings of the Chinese treaty ports, efforts to ensure the supply of fresh water were often linked to concerns about securing pure milk. The cholera germ was understood to travel through air, water, and milk. British sanitarians in Shanghai, for example, repeatedly drew connections between the provision of spoiled milk and "bad" water. As one commentator wrote in the *North China Herald,* "The air we breathe is unhealthy and impure; the water we drink requires a multiplicity of processes before it can be considered absolutely free from poison, our clothes are washed in stagnant and fetid pools, and our milk is a frequent vehicle for the conveyance into our system of fever-germs."[40] It was an equation articulated by Patrick Manson in the 1886 flotation prospectus for the Dairy Farm Company he helped to establish with farmland and premises in Pokfulam, a district on the western side of Hong Kong Island: "From a hygienic point of view the milk supply of a community is second in importance only to its water supply."[41] In Hong Kong, the provision of milk was frequently compared to that of fresh water. Significantly, as the idea of establishing a dairy farm was taking shape, the Tai Tam waterworks scheme was underway with the purpose of provisioning the growing colony with fresh water.

The methods deployed to sanitize the milk supply in the metropole were adjusted in the colonies.[42] There, apprehensions about race and class conflated to give the milk question a different emphasis.[43] This is particularly striking in the oeuvre of William J. R. Simpson, professor of hygiene at King's College London and health officer in Calcutta for over a decade, who was commissioned to report on the plague in Hong Kong.[44] In Simpson's work, racial preoccupations are grafted onto a familiar hygienic agenda. Simpson's *The Principles of Hygiene,* published in 1908, consists of selected lectures on tropical public health. While Simpson underscored the importance of milk as a nourishment for infants, he underlined the singular hazards that it presented. "To drink milk unboiled in the tropics is always dangerous," he averred, pointing to the native pollution of milk with germ-infested "water from dirty ponds, tanks, and wells." "Milk," Simpson affirmed, "becomes sour rapidly in hot climates, and more rapidly if the cow is diseased." It was also imperative to safeguard boiled milk from the manifold health threats posed by dust and insects. Flies, in the tropical kitchen, were singled out as a particular "abomination."[45]

In *The Principles of Hygiene,* which was dedicated to Manson, Simpson focuses in particular on the unhygienic conditions in which milk is produced, and the characteristics of the sordid dairies. The book contains illustrations of "A Milk-Seller's Yard" and "A Milk-Seller's Premises and Cow-Shed."[46] This last depicts "a feeding vessel" next to a "mass of semi-fluid cowdung" and "cowdung cakes plastered on [a] wall." Cows are kept by privies and surface drains in flagrant disregard of basic hygiene principles. The native environment is typified by squalor: food and waste mix in toxic concoctions; milk is awash with cholera-contaminated water. "The very insanitary method of handling the milk, and cleansing of the milk utensils," Simpson intoned, is everywhere apparent in the native dwellings. And he concludes, "There is scarcely anything more dangerous than the drinking of unboiled milk in the Tropics."[47]

Simpson's work tracks the connections between infectious disease and tropical dereliction. In other literature the focus is more overtly on the interpenetration of public and private domains, and the threats posed to the colonial home by corrupted native food. The emphasis on "purity" connotes a moral and racial dimension. In particular, milk serves to illustrate the ways in which colonial domesticity can be readily destabilized; it exemplifies the porous borders that separate colonials from the working populations they depend on. In India, as in Hong Kong, concerns about the mixing of unboiled water with milk—and other food adulterations—revolved around the vulnerability of colonial women and children.[48]

As elsewhere in Asia, one of the perceived downsides of living in Hong Kong was the absence of fresh milk. Travelers frequently commented on the lack of dairy produce—milk, cream, and butter—in the local diet.[49] The missionary James Legge sought to import a cow to Hong Kong after he arrived in 1843 from Macao, but he gave up and finally dispensed with the idea of taking his tea with milk.[50] Yet milk was increasingly deemed indispensible, particularly in relation to its nutritional value. In his prospectus for the Dairy Farm Company, Manson called it "the staff of life."[51] Lowson in his report on the plague observed that "ice cream made with pure cream was also greatly relished by the European patients."[52] In 1895, the colony's annual medical report noted how for dysentery cases "milk and soda was the only food allowed. . . . The great difficulty always arises in getting sailors persuaded to remain on milk diet long enough. When the case has been a long standing one the sailor ought to seek shore employment for a time, as relapses are almost sure to follow a resumption of 'salt junk' and rum."[53]

Fresh milk was in short supply, however. Manson had anticipated a "milk famine" on account of an epidemic that ravaged the colony's cattle soon after the dairy was founded.[54] Tinned milk was no guarantee of quality, either. There were frequent incidents involving the discovery of "bad" tinned milk. In 1900, for example, Dr. Francis Clark, Hong Kong's medical officer, confiscated as being "unfit for human food" twenty cases of condensed milk from a grocer on Queen's Road.[55] The overriding aim of the dairy farm in Pokfulam was thus not only to bring down the price of milk but also to secure "its purity and [remove] it from the category of typhoid fever and other disease causes."[56] Hong Kong newspapers, echoing and reproducing metropolitan news stories, were full of tales about "bad" milk and ruthless native purveyors of "tainted" dairy produce. For example, in 1882, Lam On, a milkman, was charged with preferring "cow's milk for sale in an adulterated condition" to the Civil Hospital, with a government analyst determining that the milk was in fact composed of 16 percent water.[57] In a laboratory analysis of twelve samples of milk in 1881, eight were found to be adulterated, and in one case the milk was 51 percent water. "Not merely is the consumer defrauded," wrote Hugh McCallum, the government analyst, "but there is also the danger of impure water being used as the diluent and thus probably disseminating disease."[58]

The founding of the Dairy Farm Company, with paid up capital of $30,000 and a herd of eighty cows, was an explicitly "hygienic" enterprise that aimed to combat such abuse. It paralleled the setting up of diaries in other foreign communities in China. For instance, in Amoy (Xiamen), a herd of fifty Australian and English cows supplied the foreign community with affordable milk.[59] Commentators on the Pokfulam dairy invariably stressed that it was a "scientific" venture. Its purpose was to deal—as the company's official history put it—with "the want of a pure and adequate milk supply."[60] Milk in Hong Kong came from native buffaloes and was considered less readily assimilated by children than cow's milk. Or it came from "sickly, ill-kempt, unscientifically treated imported animals." Only a few European families kept a cow of their own. Milk was "sold without license or restriction, without proper inspection and safeguards," and "was far from pure."[61] In contrast, the new focus was on healthy cows and replacing "dirty milkers" with "hygienic cowboys" along the lines of the Aylesbury dairy in England. Indeed, James Walker, a Scottish farmer who arrived in Hong Kong in 1890 to manage the dairy farm, had earlier spent time working for the Aylesbury Dairy Company in London.[62]

The octagonal cowsheds were designed to facilitate the disposal of waste with frequent flushing out, as well as provide a convenient space for milking. The design was also intended to mitigate the impact of typhoons, providing fodder storage for the cattle and living quarters for workers as part of each small complex.[63] The local cowboys were given an exhaustive regimen of cleansing to ensure that the dairy was able "to produce clean milk, free from disease, germs and dirt." Utensils had to be sterilized before being taken to the cowsheds. The sheds had to be cleaned out, with manure removed to the fertilizing pit. The cowboys had to change their clothing, putting on a clean white suit supplied expressly by the company. Hands were to be washed before milking each cow and a clean cloth was provided for wiping the udders of the cows and for drying hands. In short, here we see in operation what Warwick Anderson in an essay on American tropical medicine, race, and hygiene in the colonial Philippines calls "excremental colonialism": a form of health governance that reflects a preoccupation with "somatic control and closure, organized around the avoidance of contamination."[64]

The early years of the dairy's operation were not without travails. As the *China Mail* declared in 1887, "The Dairy Farm has proved no exception to the rule that in Hongkong all new enterprises have to pass through a period of trial and uphill work."[65] In 1896, the herd was decimated in an outbreak of rinderpest.[66] While regular analyses of milk samples suggested improvements in quality, it was noted that "[the] delivery to the consumer of milk in its original purity depends on a number of details that cannot be too carefully watched."[67] Unscrupulous "middlemen" continued to corrupt the process. There was also vociferous criticism of the Dairy Farm Company as a commercial venture. While it purported to be a public, philanthropic initiative, it was censured for lining the pockets of a few avaricious shareholders. A particularly condemnatory piece in the *Hongkong Telegraph* in 1892 censored governor William Des Voeux for acting autocratically as "a miniature reproduction of the German Emperor." The governor had fallen ill and been put on a milk diet by Dr. James Cantlie. On making a recovery, the governor had apparently been converted into a "milky maniac," espousing the cause of milk. This "hygienic devotion to milk, this milk fever," the newspaper declared, had been exploited by the shareholders of the Dairy Farm Company, who had leaned on the governor to give them land on the corner of Wyndham Street and Ice House Lane, in contravention of the Crown Lands Ordinance.[68]

Slaughterhouse and Market

The history of the Dairy Farm's establishment in Hong Kong provides a striking example of colonial efforts to create and control new hygienic spaces of food production at a time when bacteriology was making connections between food and germs. It also underlines the extent to which colonial preoccupations with healthy food were interlinked with broader concerns about civic hygiene and cultural management. The Dairy Farm represented an attempt to manage food expressly for European consumption, circumventing local, insalubrious production methods. From milk, the company soon branched out into other food-related activities. By the early twentieth century, it was rearing pigs and fowl and provisioning the colony with pork, poultry, and eggs. In 1911, it acquired the frozen meat operation of Butterfield and Swire and promoted itself as "the only European Butchery in the Colony." Subsequently, it took over the Hong Kong Ice Company, and as the Dairy Farm, Ice & Cold Storage Company became the owner of "the only refrigerating stores in the Colony, which stores are always well stocked with Australian frozen meats and dairy produce." As the official 1919 company history declares, "Here the best of meats at all times can be had."[69]

Yet if attempts were made to detach European food management from local production, there was also a determined attempt to regulate Chinese food. As we have seen, by the 1870s native Chinese dietary habits were being increasingly censored on hygienic grounds. Particularly objectionable to colonials were Chinese methods of rearing and dispatching animals, as well as their processing of meat and its sale. Clement F. R. Allen, British consul at Ningbo in the 1880s, ceased to procure local meat after discovering the appalling state of the city's slaughterhouses, where diseased buffaloes and donkeys were butchered alongside cattle, and where "by the side of the joints intended for our eating were caldrons, in which offal and putrid meat were boiled down for grease." Fears of contamination from Chinese foodstuffs led to the growing popularity of canned or tinned produce. Like many Westerners, the Allens opted to eat Australian corned beef, mutton ferried from Shanghai, or wild game they obtained on hunting trips up country.[70]

Objections to the "diseased" meat butchered in makeshift sheds also intensified, as did criticism of the dilapidated and unruly conditions of the local markets where meat and other perishable produce were sold.

Sanitary assumptions were reaffirmed by bacteriological insights into the agency of germs in disease causation, and parasitological research that suggested the role of animals as vectors of disease transmission, particularly in Asia, which was characterized by a "wealth" of "pathogenic organisms"—as Manson noted in his book *Tropical Diseases* (1898).[71]

These colonial anxieties reprised metropolitan concerns. Writing in 1908, the same year as Simpson's *The Principles of Hygiene,* the British architect Robert Stephen Ayling stressed the need to institute a comprehensive "abattoir system" in Britain that would decrease disease and mortality. Continental slaughterhouses, which were "top lighted and well ventilated," represented for Ayling "an almost perfect arrangement as regards hygiene and the facilities for inspection."[72] A few years earlier, the French architect Julien Guadet had noted that the slaughterhouse was "a modern creation." It was modern in the same way as the laboratory was "absolutely modern": a hygienic, functional, and technologically integrated space where organic processes were mechanized. Guadet stressed the seamless and rational arrangement of the industrial abattoir, where architectural design was subordinated to efficiency.[73] Meat was "made" in the slaughterhouse, just as science was produced in the laboratory.[74]

Debates about the need for modern slaughterhouses in Hong Kong thus mirrored similar debates elsewhere. In Britain and across the empire, the call for hygienic abattoirs became more insistent from the 1870s with the passing of an amended Contagious Diseases of Animals Act (1878) and the establishment in the 1880s of "municipal veterinary hygiene" as a professional vocation.[75] In the mid-1870s, the military veterinary surgeon George Fleming had argued for the importance of establishing a veterinary police in Britain, highlighting the interrelationship between public hygiene and veterinary science. "The great and rapidly-increasing importance of the subject of Veterinary Sanitary Science, and its intimate connection with public hygiene and the general welfare of the community," Fleming wrote, "must sooner or later be acknowledged by those who are at present indifferent to the position or the progress of veterinary medicine in this country." To prevent contagious diseases, it was essential to ensure the inspection of slaughterhouses and knackeries.[76]

The institution of a modern slaughterhouse in Hong Kong was closely related to the construction of a new Central Market, and to the extension of the existing cattle depots where some 240 animals were inspected upon arrival at the Kennedy Town Wharf.[77] Meat from the slaughterhouse was

taken to the market, and subsequently distributed across the colony. Depots, slaughterhouse, and market were viewed as critical sites in a linked process of food production. During the 1880s, endeavors were made to extend the scope of the market ordinances enacted in the 1840s and 1850s, with the licensing of places where beef and mutton were sold and live animals inspected. While legislation attempted to control the selling of food through the issuing of licenses, the government increasingly sought to integrate this dispersed food-related activity, which proved impossible to monitor.

In 1883, the government decided to purchase houses and land for a new Central Market with funds earmarked for the purpose. The following year, the governor declared, "Preparations are being made for the early erection of the new Central Market."[78] Deliberations were to continue for a decade, however, with numerous calls for the government to act. Materials for the market's construction—including ironwork and fittings, such as glazed tiles—were to be imported from Britain, with shops and stalls equipped with the latest appliances in a manner that would recall "English markets" (figure 8.1).[79]

Meanwhile, sums were set aside for the reclamation of 74,000 square feet of land for a new Western Market, with further funding for a market at Hung Hom in Kowloon.[80] According to the governor, the objective of the Cattle Diseases, Slaughter-Houses, and Markets Ordinance of 1887 "was to secure the Colony from the introduction of cattle plague or other infectious diseases" with "the better regulation of our slaughter houses, and the cleanliness and good order of our markets."[81] Under the terms of the ordinance, officers of the board of health were authorized to enter premises and examine food, which they could seize and destroy if it was deemed unfit for human consumption.[82] As part of the new public health legislation enacted in the same year, it was stipulated that market watchmen should be appointed to keep watch over the public markets.[83]

Almost immediately there were calls for more to be done. In 1888, Ladds urged the establishment of new "reception lairs" or depots where imported animals could be more systematically inspected before they were slaughtered, envisaging a mechanized process or production line for the animals' disembarkation, inspection, quarantine, slaughter, and wholesale.[84] There were numerous amended versions of the 1887 ordinance. It was revised in November 1890 when the adulteration of food for humans was made punishable as a criminal offence.[85] Shortly afterward,



Figure 8.1 "Central Market, Hong Kong; Retail Stores, Ground Floor," 1895. The National Archives of the UK (TNA): Public Record Office (PRO), Kew, Colonial Office Records (CO), Series 1069/446 (28).

the acting attorney general suggested inserting "or beast" after the words "food for man" to extend the remit of the law. After a discussion in the legislative council, the phrase "food for beast or animal" was finally added.[86] Further revisions were made in 1894, with a stipulation that a "broad arrow" be branded on animals deemed healthy on inspection before they were slaughtered. There was particular focus, too, on the monitoring of methods by which animals were slaughtered and on the process of the carcasses' removal from the market and conveyance through the streets.[87]

An outbreak of bubonic plague in 1894 disclosed the blatant deficiencies of the colony's sanitary infrastructure and provided further impetus to reform. The plague coincided with a cattle epidemic that decimated the recently founded Pokfulam dairy farm (1887), prompting many commentators to hypothesize that the bubonic plague was a zoonotic disease.[88] The possible animal source of the human infection intensified concerns about the ingestion of spoiled animal products. "The food supply of Hongkong [*sic*] is fairly good," noted Lowson in his medical report on the plague, "but could be improved from a public health point of view if the wishes of the Colonial Veterinary Surgeon were more carefully attended to."[89]

The new Central Market was inaugurated on May 1, 1895. The *Hongkong Weekly Press* celebrated the "healthful change" from the "old dirt begrimed sheds which have for the last years answered for the Hongkong Market." As the newspaper commented, "The market is in every respect adapted for the purposes for which it was erected." Constructed with concrete floors, the emphasis was on ventilation, circulation, and hygiene.[90] Although the neutral style of the slaughterhouses and depots—sited in Smithfield (named after the meat market in London) at Kennedy Town—contrasted with the Romanesque exterior of the new market, there were evident overlaps in the functional design of both spaces that stressed efficiency and productivity (figure 8.2).

The pared-down, open-plan symmetry of the interior enabled constant inspection to ensure the exclusion of unsavory objects and persons.[91] On the recommendations of the sanitary board a head overseer was appointed at a salary of $270 per annum "to keep an outlook on what is going on, in addition to the inspectors, who will not be able to spend the whole of their time in the markets."[92] The design of the market also encouraged a kind of "delegated mutual inspection." Butchers could watch each other in a form of "cross-monitoring" that was "overlaid by fixed supervision and circulating inspection."[93]

A key aim of these purpose-built hygienic spaces was to sanitize the urban environment. Both market and slaughterhouse represented an impetus toward "agglomeration." As Chris Otter has observed, "Before large abattoirs were built in the late nineteenth century and the early twentieth, animals were killed in tiny slaughterhouses scattered erratically across urban space."[94] In the new agglomerated spaces of the modern city, animals, butchers, and meat vendors could be cleared from the streets, brought together, and more readily supervised.



Figure 8.2 "Cattle Slaughter House Interior, Hong Kong," 1894. The National Archives of the UK (TNA): Public Record Office (PRO), Kew, Colonial Office Records (CO), Series 1069/446 (23).

Food and Colonial Governance

This chapter has considered debates about "good" and "bad" food in Hong Kong in relation to the construction of interconnected and multiplying hygienic spaces: dairy, slaughterhouse, and market. Exploring the evolution of colonial governance through the processing and management of food reveals how material systems and the regulation of bodily practices were embroiled in colonial power. As several other chapters in this volume demonstrate, the preparation and consumption of distinct foods function

as a means by which social groups differentiate themselves from other communities. The extensive anthropological literature on food, pollution, taboo, and cultural identity has also pointed to the ways in which diet and culinary practices are linked to the production and maintenance of sociocultural boundaries.[95] Hygienic precepts determine classificatory systems, as Mary Douglas argued in her seminal analysis of "dirt" and "uncleanliness" as "matter out of place."[96] Food can thus provide a critical vantage for reconsidering how boundaries are policed to ensure "the purity of social categories through the exclusion of objects and people that [do] not belong."[97] The aim of this chapter has been to draw upon and contribute historical grounding to this growing body of anthropological and sociological work. It has examined how and why colonial agents attempted to regulate the borders between domestic and public spaces, between protected hygienic zones and informal settings of food production. In so doing, it has endeavored to demonstrate how colonial oversight of food processing, selling, and consumption was central to a politics of segregation and to a drive for agglomeration, wherein distributed activities were consolidated in incipient hygienic spaces.

In 1901, after a long delay, the Food Supply Commission submitted its largely toothless report. The committee, chaired by J. J. Francis, QC, had considered Hong Kong's food supply across sectors, including on steamship lines, in hotels, the gaol, the Government Civil Hospital, and military establishments. Advertisements were placed in local newspapers to solicit public views. In the report, the monopoly held by private meat producers, which kept prices artificially high, was criticized. There was a call to stamp out food piracy, as well as recognition that given the pressure of space in authorized markets, traders should be permitted to sell their produce outside. The committee called on the markets to be kept clean "by clearing the passage of loafers" and thereby encouraging "foreign ladies to make their own purchases." Finally, the report envisaged the opening of other market spaces across the colony "with means of conveyance by tramways and ferries."[98]

There were, of course, other dimensions to the food question in Hong Kong. Despite lengthy reports and protracted debates in the legislative council about the need for a comprehensive food production system, the state's interventions were limited and its solutions to the food "crisis" were piecemeal at best and repeatedly delayed. There was also a serious mismatch between the claims made for bacteriology and its ability to deliver.

For much of this period, health officers and researchers were unable to provide evidence of how disease was actually transmitted via food or around the colony. Besides, there were too few investigators and sanitary inspectors to regulate hygiene in a comprehensive way. Instead, the formal focus remained largely on regulating selected institutional sites and locations in which supposed disease transactions occurred. Even then, the resources devoted to food inspection were often inadequate to the task, prompting complaints from the colonial surgeon about the lack of manpower. In 1900, one inspector monitored ten markets.[99]

Some Europeans remained fatalistic about the possibility of ever changing Chinese foodways. Still others were partial to Chinese food. Opposition to colonial food legislation came from vested interests and the Chinese community, indignant at the intrusion of the state into their daily lives. There were other voices calling into question the framework within which food was being defined and standardized. The physician and barrister Ho Kai, for one, noted the culturally relative meanings of "tainted" and "unwholesome" when applied to Western or Chinese foods. Preserved eggs or dried duck, which were distasteful to Europeans, were delicacies for the Chinese. Ho Kai had protested passionately against the intrusive bylaws introduced with the 1887 Public Health Ordinance. Above all, he rejected the notion that legal provisions explicitly formulated to deal with concerns in the metropole should be imported wholesale to Hong Kong without modification, given the colony's social and cultural particularities. "One might as well insist," he exclaimed, "that all Chinese should eat bread and beefsteak instead of rice and pork, just because the two former articles agree better than the latter with an English stomach."[100] Food, for Ho Kai, was a mark of difference, and he objected to the proposed public health bill on the grounds that it failed to recognize deeply rooted cultural distinctions.

Notes

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1. Editorial, *China Mail,* November 10, 1886, 2; "Government Notification No. 33," *Hongkong Government Gazette,* January 29, 1887, 80.

2. "Diseased Meat," *China Mail,* March 24, 1876, 3; "Diseased Meat," *China Mail,* March 25, 1876, 5; "Breach of the Slaughter House Regulations," *Hongkong Daily Press,* February 12, 1884, 2; "Selling Diseased Meat," *China Mail,* December 11, 1885, 3.

3. Editorial, *China Mail,* March 8, 1892, 2.

4. "Colonial Veterinary Surgeon's Report for the Year 1900," *Hongkong Government Gazette,* May 25, 1901, 1056.

5. Chris Otter, "The Vital City: Public Analysis, Dairies and Slaughterhouses in Nineteenth-Century Britain," *Cultural Geographies* 13, no. 4 (2006): 517–537.

6. "Report on the Census of the Colony for 1901," *Hongkong Sessional Papers* (1901), 8–9.

7. On the "instructive" nature of British imperialism in China during the late nineteenth and early twentieth centuries, see James L. Hevia, *English Lessons: The Pedagogy of Imperialism in Nineteenth-Century China* (Durham, NC: Duke University Press, 2003), especially 13.

8. James A. Lowson, "The Epidemic of Bubonic Plague in Hongkong, 1894," *Hongkong Sessional Papers* (1895), 204.

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Part III

MORAL FOODS

9 | Becoming Healthy

Changing Perception of Tea's Effects on the Body

Lawrence Zhang

Tea (*camellia sinensis*) is a popular drink that has obvious physiological effects. It is therefore no surprise that quite early in the history of tea, it was already talked of as a potential medicine for certain illnesses as well as a remedy for physical maladies. In sixth-century China, pharmacopeia included the modern word for tea, *cha*, for the first time among the herbs that one could use as a part of the treatment of illnesses and diseases. Even earlier records refer to bitter plants using the word that was a precursor to tea, which may be references to the drink we so dearly love today.[1]

Contemporary portrayals of tea in marketing and publications also emphasize the potential benefits that tea can confer on a drinker. Scientific studies have generally shown a modest possibility of tea being beneficial for various ailments, at least in the chemically extracted form of various components of tea.[2] Once this information reaches the popular press, however, the carefully qualified statements of scientists researching the effects of tea in very specific doses and applications give way to sometimes outlandish claims of curing every conceivable illness, from cancer prevention to weight loss, from better skin condition to increased brain function.[3] This is reflected in the proliferation of products using some element of tea as a nominal ingredient. The association between tea and health in the mind of the average tea drinker is a strong one. Even in press reports the potential ills of tea are frequently mitigated by immediate claims that its benefits outweigh the risks.[4]

The historical record does not always contain such a positive association. Benefits of drinking tea were always countered by worries about its ill effects, which ranged from mild to serious. The purpose of this chapter is to explore and recover a lost narrative of the potential ill effects of tea on the human body, and in so doing help shed light on an area of food consumption that is normally seen as marginal. Tea, although ubiquitous, is not well studied because it straddles the boundary between food and medicine, and as a result does not strictly belong to either of these categories. Similar to Tatsuya Mitsuda's chapter on sweets in this volume, looking at how tea has been treated can help us find changes in the discourse surrounding ingestible items that are consumed on a day-to-day basis. Precisely because of the ubiquity of items such as tea and sweets, the changes in ideas about these items' effects can materially alter consumption patterns.

Specific to tea, this chapter argues that the discourse on the healthfulness of tea only changed decisively starting in the late nineteenth century, and this change is associated with the rise of scientific understanding of how food and drink influence the human body. In the past, writings on tea have included more nuanced pronouncements that could include some stern warnings about tea's potential harm to the human body that took into account differing circumstances of the drinker. The Chinese and Japanese have had a long history of drinking tea, and historically their understanding of tea's effects on the body was complex, accounting for individual constitution and receptiveness to the drink. As tea was exported to Europe, however, the new commodity created anxiety among British drinkers, who were suddenly obsessed with the drink. Worries about tea sprang up with fears that the drink caused bodily harm, alongside other undesirable effects that sometimes had little to do with the drink itself but linked to tea's having a moral, or amoral, dimension. The anxiety was real, even if the science behind it was not, but there was certainly worry that tea was not purely beneficial along with a sense that caution needed to be taken in drinking the beverage.

As traditional medical theories gave way to modern scientific medicine using molecular biology as an important analytical tool, however, the ways in which human beings have understood the effects of a certain substance on the body changed with it as well. Tea is no exception to this change. Modern medicine's claim of universality of the human body effaced the distinctions and exceptions made by earlier theories on the effects of tea. The causal relationship between constituent chemicals in tea and their

effects on the body also changed the way research on this subject has been conducted. Now when people speak of "tea" as a healthy drink, for example, it is no longer clear if it is really "tea" that is the drink that is healthy, or if it is merely the vehicle that delivers certain chemical compounds that are seen as beneficial. It is an example of how our changing understanding of diet and health has been transformed and calls into question what it means when a food item is referred to as healthy or otherwise. David Arnold's account of how rice was treated by British authorities in India, for example, shows some similar parallels in which early worries about the potential harm of the food eventually gave way to a scientific understanding that reclassified it as no more "bad" than other grains. In tea's case, perhaps because of its marginal status as a foodstuff, the work was not done by national health authorities but rather through the pages of advertisements that aimed to convince the end consumer that the drink was healthy and even beneficial for the human body. While the scientific literature remains inconclusive in its verdict on tea, to the average consumer it has certainly been reimagined to be a mostly healthy drink.

Traditional Medical Theories in China and Japan

The earliest examples of references to tea's effects on the body came from China, the world's first consumer of tea as a drink. These early records did not mention tea itself, as "tea" (*cha*) was not yet in use as a word. Instead it appeared under the guise of names such as *tu,* which denote a bitter plant that may refer to tea.[5] According to Lu Yu (733–804) in his treatise *The Classic of Tea* (*Chajing*), the first book on tea written in the eighth century, the appearance of the character for tea, *cha,* did not appear until the early Tang dynasty (618–907), when it was included first in the *Phonetic Explication of Words in the Kaiyuan reign* (*Kaiyuan wenzi yinyi*). An even earlier word, *tu,* was used in the *Erya,* a dictionary that dates from around the third century BCE.[6] While *tu* may not correspond perfectly to *cha* of later times, by early Tang it is clear that *cha* came from the word *tu,* as a Tang dynasty edition of the medical treatise *Commentaries on Materia Medica* (*Bencao jizhu*) used the term *tuming* to describe a plant that was most useful for combating sleepiness.[7] This was certainly referring to tea, as *ming* was and still is an alternative name for tea, and one of tea's defining characteristics, that of inducing wakefulness, is used as the major descriptor of this plant.

In the introductory section in *The Classic of Tea,* Lu Yu also discusses the basic characteristics of tea as a medicine. Tea, he says, is "most cold," and suitable for those who are careful in their behavior. When encountering illnesses such as heat, dullness, headaches, dry eyes, or discomfort in the limbs, drinking a few sips will have the same effect as *tihu,* or morning dew. However, Lu Yu wrote, tea that is "harvested at the wrong time, produced with the wrong method, or mixed with other types of leaves" will not only be useless as a medicine, it will actually cause diseases.[8] Two things are noteworthy here. The first is the determination of tea as a drink with cooling properties, an identification that persists in Chinese views of tea. The second is the claim that only properly produced tea will be beneficial; improperly processed tea will be harmful to the body.

The criteria set out by Lu Yu as proper production processes are rather stringent. The tea must be harvested between the second and the fourth lunar months (roughly between April and June). It must be grown in the right environment, with the appropriate number of shoots, and among the available buds only the best should be harvested. Teas should never be harvested on rainy or even cloudy days.[9] Unfortunately, Lu Yu's description of the production process itself amounts to no more than seven verbs: harvest, steam, mash, hit, roast, pierce, and seal. He gives no indication of what he would consider improper beyond what I just described above, nor what kind of harm would befall the unlucky fellow who drank tea that was badly made.

Following Lu Yu's groundbreaking work, the subsequent history of writing on tea can be classified into three types. First are the occasional writings, which include all kinds of poems, jottings, notes, and other miscellaneous observations on tea. Second are the texts written by, and largely for, enthusiasts. Third are the medical texts that deal with tea in the context of medicine and the materia medica. For the purpose of understanding how people thought about the potential harm that tea could cause, the third type of writings is most informative in that it often includes information pertaining to tea's medical effects. While the writings for enthusiasts are often the most detailed in their description of tea's production and consumption methods, they are also focused more on the taste of the drink, and less on its effects.

In musings on the effects of tea on the body, few are more widely quoted than the Northern Song dynasty (960–1126) literatus Su Shi (1037–1101). Su Shi wrote a short section on tea included in *Notes from Chouchi*

biji that states that "to be rid of annoyance and fullness, tea is indispensable, but it also quietly hurt many people. I have a method, which is to use thick tea to wash one's mouth after eating, which rids one of the remnants in the mouth while leaving the stomach and the spleen in ignorance [of the presence of tea]. The meat stuck between the teeth is melted and disappears, and the teeth are cleansed and are stronger. For this I use low- to medium-grade tea, and rarely good ones. Do it every few days and it is not harmful at all, and is very reasonable."[10] The idea that tea is unfit for frequent consumption is strongly implied here, especially as it is believed to harm the stomach and the spleen. By spitting out the wash Su was avoiding the ill effects of the tea while still gaining the benefit of cleansing his mouth. Unlike Lu Yu, Su does not qualify what he says with claims about the quality of the processing; tea seems to him to be a useful, but at the same time potentially harmful, thing to drink.

In the canonical *Systematic Materia Medica* (*Bencao gangmu*), Li Shizhen (1518–1593) of the Ming dynasty (1386–1644) explored all the effects of tea as part of his comprehensive treatise on medicinal herbs. Quoting from earlier texts, some of which are no longer extant, he describes tea's effects as causing sleeplessness and weight loss. It should be drunk warm, he claimed, because cold tea would cause phlegm. One should avoid drinking tea with an empty stomach, after a great thirst, or after consuming alcohol, and avoid taking it at the same time with certain other herbs. This is not to say that tea had no medical value, but Li certainly had worries as well.[11]

Li describes those concerns in well-articulated detail. He first describes the nature of tea as being "bitter and cold; it is *yin* of the *yin*." If people with weak or cold constitutions, or people with weak blood, were to consume tea on a regular basis for prolonged periods, the spleen and the stomach would slowly take on hidden damage, which can cause all types of ailments, such as phlegm, bloating, weakness, yellowness accompanied by weight loss, vomiting, diarrhea, stomach pain, and so on. This recalls Su Shi's solution to drinking tea, which also cites the spleen and the stomach as organs that would potentially be harmed by tea. Women are at higher risk for these ailments, and Li notes poignantly that because tea is a daily item, the harm it causes is often unnoticed because of its prevalence. He relates an anecdote that describes how when he was younger, he would often drink a few bowls of fresh tea until he sweated a little, and felt that it was good to do so. As he aged, however, his stomach's *qi* had been damaged

a bit, and he could slowly feel the accumulated damage that tea caused. He would feel uncomfortable and want to throw up, his stomach would be cold, and he would suffer from diarrhea. He writes this down to warn others who also like tea.[12]

Other treatises that mention tea's medicinal properties also give neutral evaluations of tea's effects on the body. Zhang Lu's (1617–1699?) *Encountering the Sources of the Classic of Materia Medica* (*Benjing fengyuan*), compiled during the early Qing, quotes much of Li's work on tea, but also expanded Li's view in one respect in saying that drinking new tea (that is, tea produced in the current spring) could make one's voice unclear because it suppresses the fire in the body. Those who are cold by nature and easily fall prey to diarrhea should instead find substitutes.[13] The idea that new tea should not be drunk immediately is echoed in Japan. Kaibara Ekken's (1630–1714) work *Lessons in Nourishing Life* (*Yōjōkun*) states in very clear terms that drinking new tea is harmful for much the same reason already stated. In particular, Kaibara recommends that new tea (*shincha* in Japanese) should be drunk only after the first lunar month, while those with stronger constitutions could begin drinking it after the tenth month. Since tea in Japan is normally harvested in late spring, around the third lunar month, not drinking the tea until the first month means waiting for almost a year. Failing to heed his advice might result in eye problems, anemia, or diarrhea.[14] This in fact flies in the face of today's connoisseur wisdom that green tea should be drunk as fresh as possible, because this way it retains the most flavor. Japanese tea kept for a year would often be somewhat stale in comparison, and given storage technology in Kaibara's time, the staleness would have been even more pronounced. Nevertheless, Kaibara recommends such habits, revealing that his concern for the harm caused by tea is real.

In Zhao Xuemin's (1719–1805) *Supplements to the Systematic Materia Medica* (*Bencao gangmu shiyi*), compiled during the mid-Qing, there is also a substantial section on tea. The innovation here is that Zhao divided tea into different categories based on their respective properties, recognizing for the first time subcategories of tea that have different effects on the human body. One notable example for our purpose here concerns tea from the Wuyi mountain area in northern Fujian province. Zhao notes that the tea here is "black and the taste sour." While other types of tea are generally cold and therefore unsuitable for those with weak stomachs, Wuyi mountain tea alone is "warm, and not harmful to the stomach."[15] Those who have stopped drinking tea for health reasons could drink this instead.

This new acknowledgment that not all tea is cold in nature is a reflection of changing tea production methods. Whereas up until the early Qing there existed only green tea, by mid-Qing other types of tea, notably black tea (fully oxidized), and later wulong tea (semi-oxidized), began appearing in written records. The introduction of these new production techniques meant that medical knowledge regarding tea needed to be updated. The reflection that wulong tea (and probably black tea as well) is of a different nature than green tea in medicinal property is not a surprising one. It also means that the warnings given previously about drinking tea in excess may change depending on the type of tea one drinks.

Other refinements appeared as well. For example, in *Updated Materia Medica* (*Bencao congxin*) by Wu Yiluo (1704?–1766), written during the same period as the *Supplements to the Systematic Materia Medica,* Wu explains that previous admonitions on the ills of drinking tea were really referring only to tea that was of poor quality. He believes that because tea comes from "the clearest *qi* under heaven and earth, and grows in sandy soil, cultivated by the dews and the mist, and unaffected by the dust and dirt of the world, this is why tea could clear the heart and mind and cleanse the stomach and spleen."[16] Previous writers, when they talked of tea causing weight loss, illness, and discomfort, were really focusing on teas that were bitter or astringent. Wu believes that if the tea drunk is "sweet [*gan*] and smooth [*xi*]" there is no problem. He also advocates using only tea that fits those two criteria when tea is called for in a medical formula. The "sweet and smooth" formulation is not seen in previous texts that I have consulted, and it is not clear what allowed Wu to make that determination. Sweet and smooth, however, is the typical profile of a good green tea. Wu therefore echoes Lu Yu in saying that good tea, properly produced and grown, is harmless. It is teas that are mishandled during processing or growing, or are inferior in some other way, that cause problems.

When comparing Wu's interpretation with Li Shizhen's writing, however, one cannot help but conclude that there is no implication of quality in Li's account; tea is simply unsuitable when drunk too much or when it does not fit one's constitution. Li never mentioned the quality of the tea itself when speaking of its potential harm. The unqualified claim that tea, when drunk excessively or when the body's constitution does not fit the drink, could be bad for you therefore seems to be the mainstream opinion among those whose focus was on its medicinal properties, with an important dissent among aficionados that tea was fine so long as it was made

properly. The introduction of new tea types also made it more difficult to make a blanket statement on the general effects of tea on the human body. The appearance of Wuyi tea as a separate, safe category, for example, reflects the evolution of tea production technologies that led to the emergence of new types of teas, further complicating medical understanding of tea's effect on the body. However, there is a broad consensus that tea is cold in nature, and that it affects the stomach and spleen in a certain way. Excessive consumption is also high on the list of commonalities among the claims made. The idea that tea is a healthy drink with no reservations does not seem to be rooted in East Asian medical tradition.

Changing Perspectives

If the idea of tea as inherently healthy did not originate in East Asia, then where did it come from? As the rise of scientific medicine came from Europe, it is instructive to see how tea was treated there and how conceptions of its effects on health changed over time. The largest market for tea in Europe was, and still is, the United Kingdom. Tea was introduced there sometime in the mid- to late seventeenth century, and drinking it quickly became a daily routine for many, as attested by the import data of tea over the period, which showed exponential increase in the amount imported by the East India Company in the early eighteenth century.[17] The publication of a large number of books on the subject of tea also coincided with this increase in consumption, as readers were curious as to the effects of this drink. The change in how tea was perceived by British writers on the subject illuminates the larger changes that took place in our understanding of how food can affect the body upon consumption.

An early extant book in English touching on tea is *An Essay on the Nature and Quality of Tea,* which noted the various beneficial effects of tea on the body. The author, John Ovington, a chaplain to Queen Anne (r. 1702–1707), was adamant that tea was good for the digestive functions of the body. To illustrate such a point, he noted that among the "Tartars" of China it was common to eat raw horsemeat, and because of the particularly hardy constitution of the body of these Tartars, they were able to digest it just as easily as the British do boiled or roasted beef. However, even they would sometimes suffer from digestive problems, and "they readily apply themselves to Tea, without consulting any other Physick; and in this

way find so much Relief, and their Appetites are so effectually strengthened, that they soon recover their Digestive Faculty."[18] In fact, Ovington goes so far as to claim that tea is able to literally dissolve meat, thus explaining its digestive aid properties.[19]

This anecdote is no doubt used to illustrate the efficaciousness of tea as a digestive aid, but at the same time, Ovington notes that the "stout and robust Tartars," with their strong constitutions, were more able to take advantage of tea's virtues than the "delicate and soft Chinese."[20] He seems to suggest that there is some differentiation between different groups of people, and that one universal effect was not applicable to all. The British, Ovington claims, had similar problems as the Tartars, and would therefore benefit from drinking more tea. In his conclusion, he also made it very clear that he did not consider tea to necessarily be good for all people; a person's constitution was crucial in determining whether or not tea was to be a beneficial drink.

Ovington's tone is very much an introductory one; tea was not yet imported in large enough quantities for it to be a national drink, and many of his readers would not have had much personal experience with it. His position as court chaplain must have been instrumental in giving him access to this otherwise rare drink, and it is quite possible that his work thus contained a certain amount of advocacy in addition to description. As tea became more common, however, attitudes also changed, as did the line of inquiry and investigation on the health effects of tea on the body. Whereas Ovington generally used what amounted to hearsay to substantiate his claims, later writers began conducting scientific experiments and constructing elaborate theories of why tea was good or bad for the body.

These subsequent researchers did not all share Ovington's enthusiasm for tea. One such type of writing is the anonymous *An Essay on the Nature, Use, and Abuse of Tea, in a Letter to a Lady.*[21] In this work the author seems to be a physician, or at least someone familiar with medical theories of the time. The basic problem with tea, he claims, is that it deprives a person of his spirit by thinning and then "depauperating" the blood.[22] Focusing on the diuretic effects of tea, the author argues that thinning the blood and the consequent increase in attention and mental acuteness are in fact temporary, and that they merely deplete a person of the finite supply of spirit that he or she possesses. Such depletion, ultimately, causes what this anonymous author termed "hypochondriack disorders," with symptoms such as nervousness, fear, social withdrawal, and other similar problems

that modern medicine would generally classify as a mental illness or anxiety disorder.[23] In contrast, alcohol increased a person's spirits and was therefore beneficial to health.[24]

There is an interesting sexual dimension to this line of argument regarding tea's ill effects on health, which may perhaps explain the use of the device of a "letter to a lady." The second half of this work concerns itself chiefly with the reproductive functions of men and women, and tea's negative influences on them. Many effects—from the possibility of miscarriage to conveying "crudities" to the child by the abuse of tea to the suppression of the production of milk—are blamed on the use of tea by women during and after childbirth.[25] Likewise, men were said to have suffered from a diminished "prolifick energy" as a result of drinking too much tea.[26] The root cause of these illnesses is the dilution of blood and the attendant problems that arise from the body's deviation from its natural state.

Experimentation and somewhat more scientific approaches began appearing around this time as well, partly because tea was becoming a widely available commodity and therefore easily obtained for research. Thomas Short, a medical doctor, performed a number of experiments that attempted to discern the nature of tea, and his work *A Dissertation upon Tea* concludes with an overwhelmingly positive endorsement of the drink as beneficial to health. According to Short, the list of possible diseases that tea could treat is long, and he summarizes the effects of tea on each of them. Diseases that are related to blood, obstruction of the lungs, coughs, flatulence, and stones are noted as serviceable by tea.[27] Gout and scurvy are also noted as being treatable with tea, the first no doubt as a diuretic, and the second because tea contains vitamin C, although this was not known at the time.[28] At the same time, Short believes that differing constitutions would result in different outcomes, and that those who were "Phlegmatick and Melancholy" were particularly well suited to tea, while women were also better suited than men.[29]

A more scientific objection to the use of tea can be found in John Lettsom's *The Natural History of the Tea-Tree, with Observations on the Medical Qualities of Tea and Effects of Tea-Drinking.* Lettsom, also a medical doctor, conducted a number of experiments and interviewed a number of people who were knowledgeable in the matter, and came to an interesting conclusion with regard to tea. Lettsom wrote that the Chinese were "described to be pusillanimous, cunning, extremely libidinous, and remarkable for dissimulation and selfishness, effeminate, revengeful, and dishonest."[30]

Then he speculated that perhaps the general diet of a place gradually changed the outlook of a nation. In this case, the use of tea had increased this sort of disposition to make the Chinese the way they were. This echoes earlier concerns about tea causing nervousness and other mental illnesses, and perhaps also reflects the gendered approach to tea as the drink associated with females rather than males.

Up until this point, British writing on tea differed from Chinese or Japanese writing only on specifics but perhaps not in general principles; tea was held to have effects on the body, but precisely what it did to the body was dependent on individual circumstances and constitutions. Some were more susceptible to the negative influences of tea, while others were more immune to them and could derive benefits from drinking tea. By the nineteenth century, information in English-language sources regarding tea had become more accurate, at least insofar as China and the tea customs there were concerned. In books such as *Tsiology: A Discourse on Tea,* there are descriptions of the product and its manufacture by someone who may have actually traveled to China himself, or at the very least received firsthand information from reliable informants. Medical approaches to tea also became more systematic. After over a century of drinking tea, observers of the drink were by then aware that tea probably did not produce the severe negative effects feared in the past, especially when it comes to hysterics or other oddities.

At around the same time there were also new ways of analyzing tea and its effects on health that reflect changing medical practices and our understanding of the human body. Whereas writings on tea during the eighteenth century generally rested upon theories of medicine based on one's humors, the free flow of blood, and the excretion of spirits, by 1863 there was evidence of an approach to tea that was much closer to modern-day analysis of the drink. In *Popular Treatise on Tea,* author John Sumner summarizes much of the previous writings on the subject. At the same time, he introduces a new description of tea previously unseen: he includes a chemical breakdown of the components of tea leaves.[31] He identifies three things—theine, volatile oil, and tannic acid—as components of tea that have active effects on the body.[32] Breaking tea into its component parts is the beginning of a process whereby modern medical science dissects the plant down to the molecular level, and assigns tea's medicinal effects based on said molecules. Although Sumner's work is only rudimentary, it gives us a temporal marker for when the discussion of tea in a

holistic fashion transitioned to a more atomistic approach. No doubt this is part of larger changes in Western medical practices, but it does begin a process that has changed the way tea is described and studied from a medical perspective.

The reception of tea in Britain, as reflected in publications on the subject, shows us what is perhaps a typical pattern in the introduction of any new food item into a diet. The initial reaction to tea was confused, with both positive and negative opinions being proposed but little substantive arguments being laid down other than what amounts to hearsay and wild theories. The information available on the subject was scarce, and much of it was probably copied from one source to another—with little ability to verify the truthfulness of each statement. As time progressed and tea became more familiar, writings on the subject also became more sophisticated but not necessarily more accurate. The most significant development in the course of studying tea's effect on the body is one that begins to treat the drink not as a whole but as component parts. The scientific analysis of tea as a mixture of different kinds of molecules fundamentally changes how one is to study and understand tea in particular, and diet in general.

Importation of Scientific Analysis in China and Japan

The new way of analyzing tea based on molecular chemistry quickly made its way to Asia. The earliest such work I have been able to find is a Japanese translation of John Campbell Riley's *A Compend of Materia Medica and Therapeutics for the Use of Students*. The translation was published in 1871, and contains the first mention of caffeine and tannin regarding tea that I could find in any East Asian literature. Ten years later, in 1880, a Japanese article appearing in the inaugural issue of *Journal of the Tokyo Chemistry Association* (*Tokyo kagaku kaishi*) was the first extant indigenous research on the subject. The article, titled "Nihon seicha no bunseki setsu" (Analysis of Japanese tea production), discusses in great detail various chemical components that are inherent in the tea plant. The author especially pays attention to introducing concepts that are obviously not widely known to the target audience, taking time to explain to the best of his knowledge what caffeine and tannin were.[33] The author then performs a series of tests on teas obtained from various Japanese producers, and attempts to compare

teas made in Japan in terms of the chemical composition of the final product, with a special focus on the differences between green and black tea.[34] Although Japan largely produced green tea, black tea was more popular as an export item, and the comparison was included partly to show the contrasts in the active components of these two products.

Coinciding with the shift in approach to studying tea were changes in the discourse surrounding tea's effects on the human body. One such change is the beginning of a trend to group tea with other similar stimulants, including alcohol, coffee, and sometimes tobacco. Two works published in 1878 and 1879, the first titled *Study of Medicine: Learnings of Daily Lectures* (*Yakubutsu gaku: Nikkon kibun*) and the second *Conversations on Nourishing Life* (*Yōjōdan*), briefly discuss what tea does to the human body and offer contrasting views that are indicative of the traditions on which both works are based. On the one hand, *Study of Medicine,* a work originally written by Dr. Christian Jacob Ermerins, a Dutch doctor who came to Osaka in 1870, translated by Mise Morobuchi, and published by the Osaka Public Hospital, groups tea with coffee, and discusses the alkaloids in the two drinks, the presence of caffeine and its stimulating effect, as well as tannins. Collectively, these chemicals disrupt the mucus lining of the stomach and the tannins can hinder digestion of proteins, therefore neither tea nor coffee aids digestion at all.[35] While both drinks help with alertness, they disturb sleep and as a result can lead to mental weakness, headaches, heart palpitations, and other similar nervous problems. Moreover, the author maintains that as tea is the weaker of the two drinks, it has little medical value and it is rare to see it used as a medicine.

Conversations on Nourishing Life, on the other hand, written by Kubo Yoshihito, an otherwise anonymous author, places tea between the sections on alcohol and tobacco, and mentions how tea helps to encourage one's alertness and aids digestion, but if drunk in excess can hurt one's digestive capabilities. Kubo also mentions tannins but speaks of them as a type of "essence" that comes from the body of plants. They serve to help relax the body and in moderation can help one's health.[36] These two opposing views are not exactly reconcilable. Part of this may be cultural; Ermerins, the foreigner, had little good to say about tea. His approach is also more scientific in tone and speaks of the effects of tea and coffee in a mechanical manner. Kubo, in contrast, is more favorable toward tea, and his brief description of tannin is almost mystical in nature, retaining the

language and style of earlier tracts based on traditional East Asian medical understanding.

In the subsequent decades a slew of different articles appeared in Japan that followed the same line of inquiry in studying the components of teas, many of which were also published in the *Journal of the Tokyo Chemical Association* as well as in other publications, such as the *Journal of the Pharmaceutical Society of Japan* (*Yakugaku zasshi*). The topics covered were varied, including caffeine, protein, the amount of sugar contained in tea, and the temperature at which tea's enzymes become deactivated.[37] The exploration of active chemical compounds slowly grew more sophisticated. Scholars who were trying to understand tea's various components were getting an increasingly better sense of what was in the tea, of how much of these various compounds existed in teas that were produced in different places or with different techniques, and what were some of the conditions that affected the quantity of these compounds.[38] Most of these articles were produced locally by Japanese scientists, while a few were translations of works by foreigners. In comparison, prior to 1910 it is virtually impossible to find in Chinese anything equivalent on the subject; it seems that within East Asia the scientific study of tea originated in Japan.

Not surprisingly, the classical ideas of "hot" and "cold" as criteria for judging tea and its effects on the human body receive no attention at all in these articles, and are also increasingly hard to find in other venues. The import of Western medicine and the new language of scientific, molecular biology did change the way people think about tea and its effect on the human body. The jury, however, was still out on whether these compounds were ultimately beneficial to the human body. Researchers knew they existed, but it was not yet clear what they were doing to us. In the late nineteenth century it was still possible to find those who believed that tea could be very harmful. In a book called *Questions and Answers on the Benefits and Harms of Food and Drink* (*Inshoku rigai mondō*), the section on tea and coffee concludes with the insight that both caffeine and tannin were "poisons" (*dokubutsu*) that would hurt the heart and nervous system. Frequent ingestion of these two substances was not recommended. Also, there were other unspecified components that would inhibit digestion, therefore people who are used to drinking coffee and tea should try to reduce the amount of intake, and also perhaps dilute them if they are normally drunk in concentration.[39] Although the target of study has changed

from tea to its constituent components, the exact effects of tea on the body still elude precise description.

"Tea Is Healthy"

The science behind tea's effects on the body has always been somewhat inconclusive. Whether it be traditional medical theories that tailored the response to individual constitution or more universal claims of benefit or harm depending on chemical components, the verdict on tea was always somewhat ambiguous. Modern medical research on tea, in which claims of health benefits are often offset by mitigating factors, exemplifies this balanced approach to the drink's efficacy in promoting health. The general public, however, is not so swayed by technical studies of a scientific nature. Rather, they come into contact with an array of publicity materials designed to entice people to drink tea. And in this regard, the portrayal of tea is overwhelmingly positive.

The use of scientific language in support of tea being healthy as presented to the general public is most clearly shown in a booklet produced by the Mitsui tea corporation in 1926 to promote Taiwanese *wulong* tea in Japan. It used precisely the new, scientific language to talk about tea's beneficial effects on the human body. The booklet is a collection of customer testimonials about the superiority of Taiwanese *wulong* tea, so a certain amount of boosterism is to be expected. One essay, attributed to a female drinker, "SS-ko," talks about how her older brother's weak nerves and digestive problems were cured by the drinking of Taiwanese *wulong* tea, whereas all other types of teas failed to help and were in fact harmful.[40]

In 1935, Wu Juenong, a prominent tea expert during the Republican and Communist periods, and Hu Haochuan, a technical expert in tea at the time, coauthored a book titled *Plan for Reviving the Chinese Tea Industry* (*Zhongguo chaye fuxing jihua*). The book was a response to China's increasingly marginalized position on the world tea market, having been displaced by India as the biggest producer, and beaten by Japan and Taiwan in pricing power and quality. In an introductory chapter Wu and Hu discuss the importance of the tea industry to Chinese citizens. The language follows the scientific approach of analyzing constituent components, with discussions of alkaloids, catechins, caffeine, vitamins, and other

molecular compounds that are part of tea's infusion. The book was probably not the first to use these terms in describing tea in China, but is representative of the changing way of thinking about tea's biological function. Having discarded the old categories of analysis, Wu and Hu instead use language and concepts derived from an entirely different tradition and ascribe various functions of tea to these compounds.[41]

Notably, Wu and Hu did not mention a single negative property of tea in the introduction. Of course it was not in their interest to emphasize the negative aspects of tea consumption, especially in relation to overconsumption, but it is also indicative of the general trend of writing on tea in the twentieth century. Locating discussions of tea as a harmful drink becomes increasingly difficult the further one progresses into the twentieth century, at least until worries about external factors, such as pesticide residues, began to become an issue. One of the few articles about potential harm from tea was published in 1962 and written by Shen Zhonggui, a noted traditional Chinese medicine doctor. The article simply regurgitates and quotes old Chinese medical texts verbatim and adds in simple commentary that agrees with the writing.[42] Much more prevalent are articles that blend Chinese and Western traditions in talking about the health benefits or negative effects on tea. For example, in an article on tea's medical uses that appeared in the *Chinese Journal of Medicine* in 1953, the author cites Chinese medical classics such as the Han dynasty text *Sources of the Classic of the Divine Farmer* (*Shennong benjing*), the Tang dynasty *Supplements to Materia Medica* (*Bencao shiyi*) by Chen Cangqi (681–757), and other classics to discuss tea's effects. However, he then uses the new scientific medical language of chemical compounds to explain why these effects exist. Chemicals such as caffeine, alkaloids, tannins, and vitamins are credited with giving tea its medical effects even though these are explained in traditional medical terms.[43] Works using Chinese medical theories generally remain within the confines of Chinese medical journals; academic research is overwhelmingly focused on the scientific aspect of tea's medical uses. The situation has become even more lopsided in recent years as the number of publications has exploded since the 1980s. For example, since 2000 over seven hundred articles have been published on the effects of tea polyphenols alone in Chinese journals.[44]

It is worth asking here if the terms of engagement are still the same as before with regard to understanding tea's effects on the body. Using molecular biology to analyze health effects, whether in tea or in other

consumables, leads to questions about whether or not tea is still functionally at play here as an agent that causes these observed or perceived effects, or if it is merely a vehicle that delivers these compounds. When the active ingredient is caffeine, tannin, or polyphenols, then drinking tea is functionally not much different from taking a pill with the right amounts of each of these molecules. Unless there are compounds that are specifically produced in tea and nowhere else, what causes changes in the body is no longer the tea itself but whatever constituent part is contained in a tea leaf. Tea just happens to produce these compounds in specific relative quantities. When researchers have published seven hundred works on tea polyphenols, is it really tea that is of interest, or merely a small chemical component found naturally in tea? This is qualitatively different from the holistic understanding of tea drinking found in earlier texts. Researchers now establish causal relationships between specific chemical compounds and bodily functions. The beverage is merely the form in which this chemical is consumed.[45]

Conclusion

In East Asia, where tea was first drunk, historical evidence shows that there was a healthy debate as to whether or not the drink was appropriate for everyone, or if it was appropriate only for some people. Theories of health were based on one's constitution, body type, and receptiveness to tea's medical properties. The conclusion was generally that there were qualified uses for tea, but it was hardly a universally acceptable health drink. As modern scientific medicine took root, however, the study of tea's health effects became focused on its component parts. Tea was broken down into an aggregate of compounds to be investigated individually. Some of these compounds may be more beneficial than others, but it is no longer clear if tea is the object being discussed. To this day, scientific inquiries that conclusively prove tea's health benefits remain elusive.[46]

At the same time, in the popular press there are still frequent mentions of tea as a healthy drink. Older ideas of "hot" and "cold" and the harm that tea could do to the body, as explained by traditional East Asian medical texts, have been largely discarded in favor of the healthy narrative that is partly driven by marketing needs.[47] Molecular biology's focus on individual compounds only serves to give a veneer of scientific

rationality to claims made by product marketers, something that governing authorities in public health have slowly become aware of as an area that requires greater regulation. It is telling that the US Food and Drug Administration's only enforcement of health claims related to tea are about how inconclusive research has been on the linkage of tea to its ability to prevent cancer.[48]

In the end though, it was the idea that tea is healthy for all that prevailed. While narratives of tea's potential ills do exist, worries have mostly shifted from inherent problems with tea to externalities such as pesticide residues or bleach in the paper used in teabags.[49] The change in tone has as much to do with marketing as anything else; the Mitsui tea company's promotional material, with testimonials from anonymous drinkers, was certainly not scientific, but it drew on the language of the newly developed science of tea chemistry. Likewise, Wu Juenong's discussion of how tea was important for the people of China, and thus became a basis for his urge to reform the tea industry, relied on this new language of science, rather than traditional notions of medical efficacy for individual patients. Contemporary press on tea is awash with claims of its health benefits to various parts of the body. In the course of a century, in the public imagination tea had become healthy for the drinker even as the science behind it remains elusive.

Notes

1. Iwama Machiko, *Cha no yiyakushi—chūgoku to nihon* (Tokyo: Shibunkaku, 2009), 3–18.

2. Carrie Ruxton, "Emerging Evidence for Tea Benefits," *Nutrition Bulletin* 38, no. 3 (2013): 287–301; Raymond Cooper, D. James Morré, and Dorothy M. Morré, "Medicinal Benefits of Green Tea, Part I: Review of Noncancer Health Benefits," *Journal of Alternative and Complementary Medicine* 11, no. 3 (2005): 521–528; Raymond D. Cooper, James Morré, and Dorothy M. Morré, "Medicinal Benefits of Green Tea, Part II: Review of Anticancer Properties," *Journal of Alternative and Complementary Medicine* 11, no. 4 (2005): 639–652.

3. The language is usually couched in overly enthusiastic claims of health benefits, while still retaining words such as "might" and "may" to make it obvious that the claims made are not proven. For example, see Laura Newcomer, "13 Reasons Tea Is Good for You," *Time.com,* September 4, 2012, http://healthland.time.com; Linda Carroll, "How a Daily Cup of Tea May Improve Your Health," *Today.com,* June 24, 2016, http://www.today.com.

4. For example, see Luisa Dillner, "Is Drinking Tea Bad for You?" *Guardian,* April 1, 2013, https://www.theguardian.com; "Tea: Is It Good or Bad for You?" *Telegraph,* June 18, 2010, http://www.telegraph.co.uk.

5. Victor H. Mair and Erling Hoh, *The True History of Tea* (London: Thames & Hudson, 2009), 282–288.
6. Lu Yu, *Chajing,* in *Zhongguo lidai chashu huibian,* ed. Cheng Pei-kai and Zhu Zizhen (Hong Kong: Shangwu yinshuguan, 2007), 8.
7. Iwama, *Cha no yiyakushi,* 8.
8. Lu Yu, *Chajing,* 8.
9. Lu Yu, *Chajing,* 9.
10. Su Shi, *Chouchi biji,* In *Siku quanshu,* vol. 863 (1782; repr., Shanghai: Shanghai guji chubanshe, 1987), 18b–19a.
11. Li Shizhen, *Bencao gangmu* (1596; repr., Beijing: Huaxia chubanshe, 1998), 1256.
12. Li Shizhen, *Bencao gangmu,* 1257.
13. Zhang Lu, *Benjing fengyuan* (1695), facsimile reprint in *Zhongguo bencao quanshu* (Beijing: Huaxia chubanshe, 1999), 3:66b–67b.
14. Kaibara Ekken, *Yōjōkun* (1712), section 454, accessed October 10, 2014, http://www.nakamura-u.ac.jp.
15. Zhao Xuemin, *Bencao gangmu shiyi* (Hong Kong: Shangwu yinshuguan, 1971), 252.
16. Wu Yiluo, *Bencao congxin* (1757), facsimile reprint in *Zhongguo bencao quanshu,* vol. 109 (Beijing: Huaxia chubanshe, 1999), 10:14b.
17. A Tea Dealer, *Tsiology: A Discourse on Tea* (London: W. M. Walker, 1826), 96–102.
18. John Ovington, *An Essay upon the Nature and Qualities of Tea* (London: John Chantry, 1705), 24–25.
19. Ibid., 26
20. Ibid., 25.
21. Anonymous, *An Essay on the Nature, Use, and Abuse of Tea, in a Letter to a Lady; with an Account of Its Mechanical Operation* (London: J. Bettenham, 1722).
22. Ibid., 16, 18–20.
23. Ibid., 12.
24. Ibid. 39.
25. Ibid., 44–51.
26. Ibid., 52.
27. Thomas Short, *A Dissertation upon Tea* (London: W. Bowyer, 1730), 48–57.
28. Ibid., 58.
29. Ibid., 61–62.
30. John Coakley Lettsom, *The Natural History of the Tea-Tree, with Observations on the Medical Qualities of Tea and Effects of Tea-Drinking* (London: Edward and Charles Dilly, 1722), 57.
31. John Sumner, *Popular Treatise on Tea* (Birmingham, UK: William Hodgetts, 1863), 28.
32. Ibid., 29–32.
33. Takayama Jintarō, "Nihon seicha no bunseki setsu," *Tokyo kagaku kaishi* 1 (1880): 3–6.
34. Ibid., 11–13.
35. Christian Jacob Ermerins, *Yakubutsu gaku: Nikkō kibun,* trans. Morobuchi Mise (Osaka: Osaka kōritsu byōin, 1878), 7:19b–20b.
36. Kubo Yoshihito, *Yōjōdan* (Osaka, Japan: Sekigyoho, 1879), 40–41.

37. In the subsequent decades dozens of such articles were published in Japan on a wide variety of topics related to the chemical composition of tea leaves. A few examples are Moriya Monoshirō, "Chaba no hitanpaku chisso shichimotsu no kenkyu" (Study of the content of nonprotein nitrogen in tea leaves), *Tokyo kagaku kaishi* 11 (1890): 79–83; Shimoyama Junichirō, "Nihoncha baiyō setsu fu kofein teiryō hō" (Discussions on the cultivation of Japanese tea, along with a measurement method for caffeine), *Yakugaku zasshi* 50 (1886): 140–151; and Moriya Monoshirō, "Chaba no seibun to rokucha kyu kocha no seibun no kankei" (Relationship between the contents of green and black tea), *Tokyo kagaku kaishi* 10 (1889): 240–246.

38. Again, there is a large number of such articles. Some examples are Sawamura Shin, "Chaba no tōbun ganryō ni kansuru chōsa" (A study concerning the amount of sugars in tea leaves), *Nōji shikenjō hokoku* 35 (1909): 43–45; Sawamura Shin, "Seicha ni kansuru kagaku teki kenkyū" (A study of the chemistry of tea making) *Nōji shikenjō hōkoku* 43 (1919): 58–79.

39. Kaishundō, *Inshoku rigai mondō: Mubyōkiso* (Tokyo: Nakamura Zenshichi, 1889), 12–13.

40. *Uroncha no aiyōsha to narumade* (Tokyo: Mitsui chagyō, 1928), 7–10.

41. Wu Juenong and Hu Haochuan, *Zhongguo chaye fuxing jihua* (Shanghai: Shangwu yinshuguan, 1935), 9–15.

42. Shen Zhonggui, "Cha zai yiliao shang de gongyong he yincha de libi," *Jiangsu zhongyi* (December 1962): 30–32. Shen was a noted traditional Chinese medical doctor who worked at the Chinese Academy of Chinese Medical Sciences (Zhongguo Zhongyi Yanjiuyuan).

43. Tao Guang, "Cha de yiyao xiaoyong," *Zhongji yikan* (March 1953): 92–94.

44. The search was done on CNKI's Chinese journal database, the China Knowledge Resource Integrated Database, accessed August 30, 2018, http://oversea.cnki.net.

45. I am grateful for Dr. Wu Yu-chuan for his comments during a conference in Taipei in 2015 for raising this point on an earlier draft of this chapter.

46. A recent summary of metastudies on various aspects of tea and supposed health benefits can be found at Aaron E. Carroll, "Health Benefits of Tea? Here's What the Evidence Says," *New York Times,* October 5, 2015, http://nyti.ms.

47. Yin Guimao, *Chatong* (Tianjin, China: Tianjin keji fanyi chubangongsi, 1989), 164–165; Lin Qianliang and Xi Yumei, *Yangsheng chashou* (Hong Kong: Jinhui chubanshe, 1992), 151–152.

48. Center for Food Safety and Applied Nutrition, "Labeling and Nutrition—Summary of Qualified Health Claims Subject to Enforcement Discretion." US Food and Drug Administration home page, accessed August 30, 2018, http://www.fda.gov.

49. Megan Griffith-Greene, "Pesticide Traces in Some Tea Exceed Allowable Limits," *CBC News,* March 8, 2014, http://www.cbc.ca.

10 | To Build or to Transform Vegetarian China

Two Republican Projects

Angela Ki Che Leung

Meat avoidance had an important place in Chinese dietary practices, not only as a Buddhist food taboo but also as a popular food ritual.[1] It was ambiguous in the dietetic tradition of the literati elite, often called "life-nurturing" (*yangsheng*) practices, for the maintenance of the individual's somatic vitality, intellectual acuity, and spiritual fulfilment. These health practices, prioritizing light, pure (*qing*), and bland (*dan*) eating but not excluding animal food,[2] emerged around the eleventh century and reached maturity in the late imperial period, forming a tradition that is still evolving today, as shown in Volker Scheid's contribution in this volume.[3] The significant point of departure in the modern period from the traditional understanding of life-nurturing foods is the clear-cut dichotomy between vegetal and animal foods that redefines good and bad food choices in a new, scientific language. Vegetal foods are more digestible, thus "light" and better for health. The modern scientific explanation of the nutritional benefits to the individual of vegetarian foods, moreover, was readily extended to national health in terms of economic development and cultural identity at the turn of the twentieth century, in a discourse formulated by political elite with a scholarly background.

However, this modern version of vegetarianism reformulated as a hygienic and patriotic dietetic practice gradually lost its appeal in the late

1920s as attention was turning to China's peasantry, now seen as the root of the nation's backwardness. When 80 percent of China's population was made up of peasants thought to be physically and morally inferior, China's modernization seemed doomed. To reform this peasantry by improving their vegetarian diet with more animal protein to maximize energy and moral strength became an urgent task. This shift was concurrent with the appearance of biomedical nutritional science in newly established Chinese universities and research institutions, steadily filled with Western or Western-trained biochemists and nutritionists. These young scientists, unlike the first generation of revolutionaries, did not see any future in China as an agricultural country.

The most common Chinese term for vegetarianism, *sushi* ("plain/modest food"), is an ancient term that could be traced back to the oldest classics. In dietetic texts it was often used to designate ordinary, plain, largely but not exclusively plant-based food.[4] In probably the most influential life-nourishing text of the late imperial period, *Eight Chapters on Venerating Life* (1591), on the ideal lifestyle of elite literati, food was ranked according to its importance for a literatus' well-being in the following order—tea and water, congee, meat and alcohol, sweet cakes, fruit—showing the priority but not the exclusivity of plant-based food in an ideal diet. This text reiterates the key concepts of a healthy diet, bland (*dan*) and light (*bo*): "Blandness is relative to strong taste. It is like eating plain [*su*] foods after too much fat and alcohol [has been consumed]. . . . Strong taste damages health without people knowing."[5] To live a healthy, long life thus required making moral choices between modesty and excess, refinement and vulgarity, control and indulgence, but not necessarily between plant and animal foods. Meat held only a relatively marginal place in traditional dietetics.[6]

Another term increasingly used for vegetarian diets in the early twentieth century, *shushi* (plant food), also an old term in classical texts,[7] on the contrary, clearly designates vegetal foods. The interchangeability of *shushi* and *sushi* in this period indicates an increasing confusion between "plain food" and plant-based food. I would argue that the new "scientist" language on food, nutrition, and body, and the emerging concern of "national" health for a China to be industrialized were the two key developments that fundamentally reformulated the moral meanings of vegetarian *sushi* diets in opposition to a meat-based diet, a dichotomy that did not exist in traditional lay Chinese society.[8]

Modern Life-Nourishing Vegetarianism

The first generation of Chinese vegetarian activists, all from literati background but with Western training, found traditional life-nurturing practices highly relevant to China's quest for modernity. The pioneer and the most influential among them was the cosmopolitan Malay-born Cantonese statesman Wu Tingfang (1842–1922), a prominent lawyer and diplomat trained in Britain in the 1870s, who served the Hong Kong colonial government, as well as the late Qing and the Republican governments.[9] Wu made a series of efforts during the last decade of the Qing to raise the profile of vegetarianism by detaching it from Buddhism, associating it with science, and exploring ways to make it marketable. He had famously tried to persuade Empress Cixi to go vegetarian to improve her health but without success.[10] After the Republican Revolution in 1911, he continued his activism in Shanghai, where he published his *New Method for Prolonging Life* (*Yanshou xinfa*) in 1914, which echoed basic concepts of the *yangsheng* tradition but with new justifications based on his take of biomedical knowledge. In this text, Wu first provided an account of biomedical anatomy and warned that blood vessels and the digestive system could be blocked and weakened by excessive, indigestible foods. The most digestible foods, he said, were "all those that grow on soil because these are nourished by air and especially by the sun. . . . Fruit, vegetables, cereals and beans all rely on the sun to grow and are most suitable for humans. . . . Whereas beef and mouton are fat and heavy, and fish, shrimps and shellfish stink mud dirt [i.e., they stink like muddy dirt]." Compared to the light and pure stuff [*qingqing zhi pin*], [animal foods] are full of residues and hard to digest, definitely harmful for the free flow within the stomach and the intestines."[11]

The principles of traditional life-nourishing practices persisted here, as shown by the repeated use of adjectives like "light and pure" to qualify the best foods, now unequivocally meaning plant-based foods. The traditional aversion toward "fat and heavy" foods was explained in terms of "toxins" in meats. The traditional literati's food preferences were thus given new, "scientific" justifications. Wu ended the section on the vegetarian diet by giving examples of European prize-winning vegetarian athletes to prove that humans did not need meat to cultivate physical strength. For him the increasing popularity of the vegetarian diet was self-explanatory, as "vegetarian diets are the best medicine."[12] Using medicine and examples of the

industrialized West to justify a vegetarian diet, Wu subtly made a clear distinction between modern vegetarianism and Buddhist meat avoidance, a taboo considered irrelevant to the modern Chinese state.[13]

Wu's younger friend, scholar and political activist Li Shizeng (1881–1973), further developed Wu's mission and became the most systematic publicist of scientific vegetarianism in early twentieth-century China. Li was from a prominent family of scholar officials, and in 1902 went to study biochemistry in Paris, where he was converted to anarchism and became a supporter of the Republican Revolution. He was also known for his research on the chemistry of the soybean and for the bean curd factory he set up in Paris in 1908.[14] A long essay he wrote in the 1910s titled "On Meat-Eating" (*Rou shi lun*) was probably the most comprehensible history of vegetarianism in the West at the time.[15] The focus of the article was on the "scientific view on vegetarianism" in which Li privileged the chemical over Wu's physiological approach: vegetables were better because they contained all the basic nutrients (protein, fat, and especially carbohydrates) and were less toxic, whereas meats were harmful because of poisons such as ptomaine and parasites. Meat was, moreover, a "stimulant" that could harm brain nerves, causing mental diseases. Li concluded by pointing to the economic advantages of growing food plants, as these were much cheaper sources of nutrients, and by suggesting that China, as a vegetarian culture, should not be misled to develop meat industries.[16]

Scientific vegetarianism evolving from the *yangsheng* tradition was seen by Wu and Li as a rational choice for China's modern nation-building project. This idea helped to formulate the most important nationalist discourse on state building made by none other than Sun Yat-sen (1866–1925), father of the Chinese Republic shortly after its establishment in 1911, in his *Strategies in State Building*. Sun began with a chapter called "Food and Drink" in which he elaborated on the role of Chinese culinary art in China's nation building: "China is backward in every aspect, except in food and drink. China's achievements in this area are superior to all civilized countries." More specifically he praised Chinese technique in preparing vegetarian foods: "Westerners' recommendation on vegetarian eating is based on scientific knowledge on hygiene and for the purpose of improving life expectancy. Yet their vegetarian foods are not as refined, their culinary art not sophisticated. Therefore enthusiastic vegetarians are often malnourished as their diet is entirely based on vegetables . . . whereas in China, vegetarians eat bean curd, which is actually the "meat"

in vegetarian diets. . . . This is why China is entirely attuned to vegetarian diets even before [Western] scholars made recommendation."[17]

Sun used dietetics as the first of ten examples to illustrate his conviction that what the Chinese lacked was not the ability to do the right thing in transforming China into a modern nation but the "scientific understanding" of such good practices. In the rest of the chapter, like Wu and Li, Sun presented a scientific account of the basic nutritional components of food, and the caloric requirements for various daily tasks. From there Sun reminded his readers of the danger of excessive meat eating common in "advanced civilizations," and of "the excellence of vegetarian diets in prolonging life" as recognized by modern scientists.[18]

The Chinese political elite's recommendation of a vegetarian diet was not an isolated case but part of a global trend at the time when vegetarianism was emerging first as a spiritual movement reacting to industrialization, and developing into civil campaigns unifying socialists, feminists, and abolitionists in Europe and America. It was in England that the term "vegetarian" was coined and the first Vegetarian Society was formed in 1847.[19] By this time, the movement was gaining ground in America as well, as stated by a prominent American advocate, the physician William Alcott (1798–1859): "Vegetable diet lies at the basis of all reform, whether civil, social, moral, or religious."[20] At the same time, biomedical justifications of vegetarian diets were systematized between the late nineteenth and early twentieth centuries in the West.[21] By the 1920s vegetarianism in Europe was widely seen as a progressive, scientific, and hygienic practice.[22] In preindustrial Asia, however, vegetarianism had a distinct nationalistic take, as there was an element of cultural heritage or national identity associated with the practice, as in the case of Gandhi, who became vegetarian like his parents only after his stay in London in the late 1880s.[23]

Popular writings in China on vegetarianism also revealed both a fascination with Western vegetarians' utopian thought and a yearning for Chinese foods to be scientifically confirmed as good. An outstanding magazine that conveyed such ideas was *Eastern Miscellany* (*Dongfang zazhi*, 1904–1948), a progressive magazine run by leftist intellectuals and famous for its role in introducing encyclopedic world knowledge. In 1917 *Eastern Miscellany* published a series of articles on different aspects of vegetarianism, including one on "natural living" (*tianran shenghuo*) by Zhang Xicen (1889–1969), a Shanghai leftist intellectual and the magazine's editor. Inspired by the German naturopath Adolph Just's (1859–1936)

book, *Return to Nature,* this article discussed the harm of meat eating as an "unnatural" diet. Hu Yuzhi (1896–1986), Zhang's close colleague at the magazine, wrote an article quoting the French socialist Pierre-Joseph Proudhon to suggest a global promotion of vegetarian diets as a strategy to reduce world poverty. Meat consumption by the rich was criticized for having raised the cost of living and further deprived the poor of land needed for the production of cheap and healthy foods.[24] Such ideas were reiterated in another article in 1918 by the Harvard-trained rising star in meteorology, Zhu Kezhen (1890–1974), who cited cosmopolitan vegetarian celebrities such as Wu Tingfang, Leo Tolstoy, Sarah Bernhardt, Auguste Rodin, and Robert Lafollette, the US Republican senator, to demonstrate the "progressiveness" of vegetarian eating.[25]

However, readers' nationalistic sentiment was certainly satisfied after reading a 1917 translation of an American article in praise of eating rice originally published in a journal called *Health Culture*. This article praised rice as the best of all cereals, as it fed the largest world populations in Africa and Asia at a low cost. Moreover, it went on, "Rice-eating peoples are exceptionally strong. Chinese, in particular, are known for their stamina and industriousness." The exceptional qualities of rice that fed people in "backward" parts of the world were then contrasted against the adverse effects of "toxic meat" that the author considered unfit for human consumption.[26] Such publications of Western origin confirming rice as nutritiously superior to meat certainly helped the valorization of rice as national food for China, as seen in a 1921 university text book on human physiology, in which animal foods were described as of highest nutritional value, but cereals, headed by rice, were defined as "indispensable" for all peoples on earth.[27] Meat was thus a dispensable luxury, while rice was a necessity.

The impact of the vogue of the vegetarian diet on intellectual youth was illustrated by the request made by a Peking University student to set up a vegetarian canteen. In an open letter in November 1917 to university president Cai Yuanpei (1868–1940), an early anarchist and Esperantist, the student urged the university to promote a frugal and hygienic lifestyle by encouraging vegetarian diets. As meat was both unhygienic and expensive, he further suggested drafting regulations to standardize vegetarian diets, and using the money saved by eliminating meat from meals to help victims of natural disasters. Cai responded positively to the student's suggestion, encouraging interested students to sign the request.[28]

Early twentieth-century promotion of a new "scientific" vegetarianism[29] was readily translated into activism, as shown by Li Shizeng's bean curd factory in Paris and the Peking student's proposal for vegetarian canteens. But the early popularization of modern Chinese vegetarianism was less a result of pure idealism than of an emerging modern urban culture and market.

Vegetarianism Modern

As the first preacher of Chinese modern vegetarianism, Wu Tingfang was also the first to envision its future in an urban commercial setting. After Wu retired from public service in 1910, he began to promote vegetarianism as an urban, cosmopolitan, and trendy lifestyle. He established the first vegetarian society in Shanghai, the Society for Sensible Diet and Hygiene (Shenshi Weisheng Hui), with Li Shizeng in September 1910, a year before the Republican Revolution, to campaign for vegetarianism, and began to experiment on new vegetarian cuisine in a restaurant, known in Chinese as Micaili. The society, with a branch at the Biology Society in Paris, was housed in Wu's own residence, where members met for biweekly public lectures.[30] Micaili was a short-lived Western restaurant in Shanghai, at the Hôtel des Colonies in the French Concession, on Avenue Edward VII (today's Yanan East Road), the most dashing part of Shanghai before the fall of the Qing.[31]

This Shanghai modern vegetarian eatery, created some forty years after the first European vegetarian restaurants,[32] was new for China in many ways. It was the first vegetarian restaurant in China experimenting with new styles of cuisine. Being part of a trendy French hotel defined the nature of this "modern" vegetarian restaurant as completely different from old-fashioned Buddhist vegetarian meals served in monasteries. The radical nature of the adventure, like that of Li Shizeng's bean curd factory in Paris,[33] however, also explained its short life. A 1924 study on this ambitious venture provides an explanation: "It was a period of revolutionary changes [when] new and Western diets were being experimented, including vegetarian cuisine. . . . Mr. Wu Tingfang established a vegetarian restaurant in Shanghai [to teach people about vegetarian foods] some twenty years ago. However [it failed because] people at the time were [not ready and] strongly opposed to radical food changes."[34]

The article continued to explain that, some twelve years later, a vegetarian restaurant called Gongdelin set up by Shanghai celebrities in the artistic and business circles in 1922, was much more successful, because people were then ready to try new culinary flavors in this "democratic age." The restaurant had three objectives: to make a profit, to demonstrate the superiority of vegetarian food, and to familiarize people with Buddhist principles. "It welcomes foreign clients, and focusing on promoting vegetarianism, it plans to stop using animal names [for vegetarian dishes]." The key to its success was its superb cuisine that made vegetables "taste like meat," and its innovative menu created by famous chefs recruited from major monasteries in the region.[35] The owners of this restaurant succeeded especially in turning the restaurant into a prestigious venue for trendy cultural events and high society gatherings.[36] News on the restaurant was frequently reported in Shanghai's *Shenbao* newspaper, which published its first press conference in the spring of 1922, followed by reports on meetings of various Shanghai business, artistic, and cultural groups in the restaurant throughout the 1920s and 1930s.[37] Ding Fubao (1874–1952), a successful popular medical writer and publisher in Shanghai, initiated a highly publicized weekly "rice-meal gathering" (*fanhui*) at the restaurant from 1923 onward to promote vegetarian living, triggering a trend of vegetarian restaurants in major Chinese cities.[38]

Smart marketing of commercial vegetarian enterprises was made more effective with popular scientific nutritional discourse justifying the practice in the media. Vegetarianism in Shanghai found its most effective spokesmen in two American doctors, Dr. Harry Willis Miller (1879–1977) and Dr. Arthur Selmon (1877–1931), both Seventh-day Adventists working in China since 1903. Miller was influential in Shanghai as director of and nutritionist at the Shanghai Sanitarium from 1925 until the Second Sino-Japanese War. Widely known in Chinese as Dr. Mi-le-er and Dr. Shi-Lie-min, respectively, both were prolific writers of books and articles translated in Chinese, and respected as scientific authorities on the vegetarian diet. The media, however, kept silent on their religious background.[39]

Miller, an old China hand, was known for the "universal diet" he designed for the Sanitarium, consisting of a core made up of whole-wheat bread, half-polished rice, and "nutritious milk" based on soybeans, and for his interest in experimenting with Chinese Buddhist culinary art in enhancing the flavor of such a diet.[40] His reputation in nutritional science was further boosted with the Chinese translation of his book *The Way to*

Health, published in Shanghai in 1932 with a preface penned by the much-respected British-trained doctor Wu Lien-teh (1879–1910), then director of the National Quarantine Service. The book notably contained a chapter on eating vegetables that was often reproduced in Chinese magazines. Miller started by correcting the "wrong idea commonly held by Asians" that the strength and wealth of Western civilizations came from their meat-eating traditions. On the contrary, he noted, "From my 30-year experience as a doctor . . . I am convinced that abstinence from meat is beneficial to health" and that "Vegetarian populations usually have longer life span." Physiologically, he added, the human body was designed to consume cereal, fruits, and vegetables but not meat. Wu Lien-teh particularly praised Miller's discussions on vegetarian eating as "thorough" and concrete, "well adapted to China's customs."[41] Selmon's book *Health and Longevity*, however, was first translated into Chinese in 1917 and had at least eleven reeditions until 1928, four years after he left China.[42]

Miller also spoke through the radio to promote vegetarianism, and his ideas were frequently cited in both medical journals and popular Buddhist magazines.[43] Miller was often quoted by Chinese vegetarian activists to justify the practice of vegetarianism as scientific, as were also John Harvey Kellogg, Miller's mentor in the Adventist Church and creator of American breakfast cereal, Selmon, and other Western champions of vegetarianism.[44] Ding Fubao reassured his readers in 1940 that "in America and Germany, vegetarianism is a very powerful trend."[45]

Clearly by the early 1920s all the ingredients in the recipe for modern Chinese vegetarian living imagined by Sun Yat-sen were in place: soy milk (see Jia-Chen Fu's chapter in this volume on the development of this food) and bean curd were celebrated as modern "national" foods, national culinary art performed in chic urban vegetarian restaurants was universally acclaimed, biomedical theories on the benefits of vegetarian diets propagated by biomedical celebrities were widely publicized, and a devoted and creative urban business class was ready to invest in the business. Vegetarian diets were also seasoned with universal socialistic utopianism, becoming part of a trendy intellectual lifestyle. Old-fashioned religious ideas associated with vegetarianism and incompatible with the secular Republic were conveniently camouflaged in a scientific vocabulary seamlessly built into flourishing businesses run by lay Buddhist entrepreneurs. However, such success could not reverse the growing antivegetarian movement that emerged in the late 1920s.

Crippling Protein-Deficient Vegetarianism

Beginning in the late 1920s, a totally different view of the Chinese vegetarian diet and a highly publicized plea for more consumption of animal foods, including milk (as described in Hilary Smith's chapter in this volume) began to gain momentum.[46] A key figure in this mounting campaign was the US-trained biochemist Wu Xian (Wu Hsien, 1893–1959), whose 1927 article "Chinese Diet in the Light of Modern Knowledge of Nutrition" had a huge international and national impact.[47] This article, inspired by an influential American book, *A Newer Knowledge of Nutrition* (1925) by Elmer McCollum and Nina Simmonds,[48] powerfully demonstrated Chinese diets to be dangerously deficient. Wu highlighted the lack of meat in the average diet observed in social surveys previously done by William Adolph, biochemistry professor at Yenching University, and by himself on dietaries of agricultural "middle-class families" in northern China. According to his strong-worded conclusion, "It is evident that in the Chinese diet there is little margin of safety with regard to the protein factor." "The Chinese diet is far from being satisfactory if not decidedly inadequate," he wrote, because the amount of animal protein consumed was inferior not only to Westerners but even to the Japanese. More significant still, Wu had a different historical explanation: vegetarian diets were not "traditional" Chinese practice as claimed by Li Shizeng and Sun Yat-sen. He blamed agricultural development and Buddhism for introducing vegetarian eating in China. For Wu, ancient nomadic Chinese consumed more meat and were taller, stronger, and lived longer than modern Chinese. The unfortunate shift to vegetarian eating, especially under Buddhist influence, had made Chinese totally unfit for modern life, as they are now "small in stature . . . with a higher mortality . . . [and] low vital resistance. . . . They are non-persevering, non-progressive, non-enterprising, and are easily contented." Wu urged that modern Chinese should fully develop their inherited potentialities to face the challenge of competitive modern living by adopting biomedical nutrition, the goal of which was precisely "the optimum and not the minimum." To optimize energy and power, he believed, one should eat more meat.[49]

In 1927 Wu began a series of laboratory experiments on rats at Peking Union Medical College (PUMC) to demonstrate his points. He published his first article on the experiment, "Growth of Rats on Vegetarian Diets," in 1928. Feeding four-week old albino rats vegetarian diets consisting of

cereals, legumes, and vegetables common in North China, Wu observed that the rate of growth of these rats was about half of that of the stock rats on a high-animal-protein diet. The vegetarian rats had "normal growth . . . with no sign of any abnormality," he wrote, but "the young of the second generation are undersized." He thus concluded, "Optimum nutrition of human beings cannot be obtained with purely vegetarian diet."[50] Wu continued the experiments on the impact of vegetarian diets on the reproduction, metabolism, growth, and physical measurement of rats from 1929 until at least 1938, and each time he found that the vegetarian rats underperformed.[51]

Wu Xian's background explained his strong opinion on the dietetic origin of moral flaws. He was one of the best Western-trained scientists of his generation, with a strong classical background: after taking one of the last civil service examinations at age eleven, he attended a modern secondary school in 1906. In 1911 he was granted a Boxer Indemnity Scholarship and went abroad to study at MIT, and obtained a PhD in physiological chemistry at Harvard in 1919. He returned to China in 1920 and began a brilliant career at the PUMC with a research project on the denaturation of protein and was promoted to full professor in 1928.[52] Wu's views on diet and race were those of a typical May Fourth intellectual, and were probably reinforced by mainstream American discourse during his study abroad in the 1910s.[53] He might have come across the popular booklet published by the American Federation of Labor in 1906, *Meat vs Rice: American Manhood and Chinese Coolieism*.[54] He nurtured a passionate urge to lift China from its low moral state up to Western standards. This was a position he shared with leading cultural leaders of the time, especially humanists Hu Shih (1891–1962) and Fu Sinian (1896–1950), with whom he created the influential magazine *Independent Opinions* (*Duli pinglun*), where he published short articles to educate a broader public with his passionate, nonscientific prose, including notes and observations made during his social surveys.

Such surveys were carried out by scientists in the 1920s to provide "hard facts" on the nutritional status of the Chinese, especially the peasantry, and to propose scientific solutions.[55] Wu began to carry out such surveys in 1928,[56] and continued to work with educator James Yen (1890–1990) on the Mass Education Movement's program for nutrition improvement in Ding Xian in the early 1930s.[57] These social surveys were carried out mainly with American Boxer Indemnity funds administered in

China.[58] Wu Xian began with a survey on "middle-class families" in Peking, followed by a series done in Shanghai and Nanking. In his book on nutrition in China, he listed fourteen surveys conducted between 1923 and 1936 by nutritionists and sociologists to study the nutritional status of different social groups (e.g., workers of different industries, peasants in different regions, university students, middle-school children in different regions). Mostly published in new, scientific journals in China, these social surveys became some of the most authoritative social knowledge production sources of the period.[59]

Wu's popular writings in *Duli pinglun,* based on his surveys in Ding Xian and the Peking region, however, sentimentally articulated unspoken points built into his scientific articles on the harm of vegetarian diets. In a 1932 article, for instance, he accused "Buddhist superstitions" of turning vegetarian diets into a virtuous practice in China resulting in the Chinese dislike of meat, which was the cause of national "cowardice." For Wu, the solution to the disastrous consequences of this unfortunate historical development could only be found in science: "While heredity could not be reversed, nutrition could be improved."[60] Even the apparent physical force of the peasant workers he encountered did not shake his conviction of the intrinsic flaws of vegetarian diets. He commented on a robust sedan-chair bearer fed on baked cereal cakes with dried vegetables: "His strength and perseverance seemed tremendous, which is a bit strange. But don't be mistaken, [these people] were trained to appear so. Their body may not be healthy. Had they eaten like us, they would even have been bigger and stronger."[61] His experience in impoverished Ding Xian led him to conclude about its vegetarian peasants (which represented 80 percent of China's population), "This impoverished, ignorant, drained, and selfish China needed a strong government to re-educate. When on earth will we become strong and prosperous?"[62] Wu's popular writings had great impact on contemporary social Darwinists determined to improve the Chinese race.[63]

This intensifying wave of "scientific" attack on Chinese vegetarian diets culminated in the 1938 publication of the article "Vegetarian China" by the above-mentioned William Adolph, in the influential journal *Scientific American,* which would have at least five different Chinese translations in popular science magazines.[64] This article was a summary of research done in China on the topic by Wu Xian and Adolph himself,[65] focusing on the low animal content of the Chinese diet. Its publication in a major American

scientific magazine greatly increased the international visibility of China's wartime nutritional problem. The article began by stating exactly the opposite of what Ding Fubao said at the same time, that "as an accepted nutritional regimen, pure vegetarianism is on the wane." Adolph began by first giving credit to the "unconscious" vegetarian dietary strategy of the Chinese peasantry practiced over thousands of years, describing it as economical, practical, and sufficient. He then reiterated the points that Wu Xian had already made in the 1927 article on the new *optimum* goal of nutrition and urged China to industrialize quickly in order to release land for the production of more nutritious animal foods. Like Wu, he highlighted the importance of an improved diet for "greater vigor, increased longevity, and a higher level of cultural development" for China.[66] Wu's 1927 article clearly and unprecedentedly established the link between vegetarianism and China's inferior culture, a sensitive issue that Western scientists now felt safe to elaborate on. The condemnation of vegetarianism at this historical moment was in keeping with the image in the West of Asian bodies as malnourished and deficient.[67]

This affirmation contrasts interestingly with Adolph's earlier (1923) uncertainty about the necessity for more meat in the Chinese diet,[68] and is also in disagreement with John Lossing Buck's statement in 1930 that there was a downward trend in the amount of land devoted to animal raising even in the United States, and that "whether or not China is producing too few animals for the best interests of health and national economy is still an open question."[69] Luo Dengyi (1906–2000), a younger US-trained nutritionist, also had a more nuanced stance in 1931, suggesting that vegetarianism was more advantageous to the national economy and had the welcome effect of subduing the excessive sexual drive of the young, even though animal food provided better protein for physical growth.[70]

Wu Xian's pledge to transform China by increasing animal protein in the diet received a boost during the anti-Japanese war (1937–1945), when, as Michael Liu shows in his chapter in this volume, providing sufficient protein to the military became a critical issue for fighting a difficult war. The challenge was increasingly taken up by younger China-trained biochemists such as Hou Xiangchuan (1899–1982, PUMC in 1924), Zheng Ji (1900–2010, Central University in 1928), and a few others. They later formed professional groups during the escalation of military conflict with Japan, notably the Committee on Nutrition (1936) of the Chinese Medical Association that published the first report on the "minimum nutritional

requirement for China" in 1938, attempting to set national standards in this period of great crisis.[71] Wu himself published a book on the nutritional components of all foods in 1940, which included long sections on various meats.[72] He was soon to head the Nutrition Department of the National Institute of Health of the Republican wartime government that set up toward the end of the war in 1945 a Committee of People's Nutritional Improvement with leading nutritionists of the time, including Wu, Zheng, and Hou, and PUMC's Robert Lim (1897–1969) and Adolph as advisors.[73] By then the Republic had completely turned away from the national dietary plans envisioned by its founding father, Sun Yat-sen, relying exclusively on the expertise of Western-trained biochemical nutritionists for its nation-building project.

Abortive Vegetarian Modernity?

The discussions on vegetarianism in the first half of the twentieth century captured with precision important historical moments in the state-building process of Republican China, articulating in a scientific language the shifts in the way this young nation, emerging from an old civilization, imagined itself engaging with the modern world.

The long and complex history of non-Buddhist "life-nourishing" techniques in China made early Republican political elites particularly receptive to modern "scientific" vegetarianism. In it they saw their cultural heritage justified by new science, great opportunities for China's superior culinary technique that could "make vegetables taste like meat," recognition of the nutritional values of "national" grains and plants such as rice and soya, and a smooth transition from the traditional to the new political order for literati elites. Vegetarianism could even be nicely packaged to become lucrative businesses in modern cities.

However, more significant than anything else for the Chinese, new biochemical nutritional science radically reformulated the value of meat: it could be poisonous, but it also provided the highest-quality energy-generating protein. Nutritional science thus framed meat as a distinct category, whereas in Chinese traditional life-nourishing practices it occupied only a marginal place in a wide spectrum of foods. With meat becoming the most obvious measure of dietetic value, its absence in the poor man's diet was soon perceived to be China's major problem.

Research and surveys on the Chinese diet, revealed as dangerously vegetarian, and the promotion of meat eating became a logical part of a more radical nation-building project that was to deliberately break with old agricultural traditions in order to accelerate industrialization. The war facilitated closer collaboration between Western-trained scientists and the government to improve diets for the peasants and for the soldiers, for a more competitive modern China.

Nutritional "deficiency" predicated on the lack of animal protein obsessed Chinese scientists and informed revolutionary discourse from the late 1920s well into the postwar period. While vegetarianism probably continued to attract urban elites as an individual dietetic practice, it had lost its earlier appeal as an option for a modern, strong China. It had to wait until the early twenty-first century to attempt a comeback.[74]

Notes

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1. Meat avoidance is still widely observed in China by lay society on important occasions such as mourning, or when making a wish of great consequence. The moralistic aspects of meat avoidance is shown in a psychological study: Paul Rozin, Maureen Markwith, and Caryn Stoess, "Moralization and Becoming a Vegetarian: The Transformation of Preferences into Values and the Recruitment of Disgust," *Psychological Science* 8, no. 2 (1997): 67–73.

2. On the principles of traditional elitist diets, see Françoise Sabban, "La diète parfaite d'un lettré retiré sous les Song du Sud," *Etudes chinoise* 16, no. 1 (1997): 7–57. This tradition continued well into the late imperial period. In a sixteenth-century dietetic text (see note 5), the principles of a good diet included moderation. Meat avoidance was considered good for cultivating a peaceful mind, but not a necessity for a good diet.

3. On the more contemporary engagement of the art of nurturing life, see Judith Farquhar, *Appetites: Food and Sex in Post-Socialist China* (Durham, NC: Duke University Press, 2002), 216–263.

4. On an important sixth-century agricultural text, *Qimin yaoshu* (Essential techniques for governing the people), in which the section on *sushi* includes animal food, see the example given in Sabban, "La diète parfaite," 9. The Song dietetic text analyzed by Sabban was a recipe book of mostly but not exclusively vegetarian dishes.

5. Gao Lian, *Zun sheng ba jian* (Eight chapters on the ways to foster life), 1591 (Beijing: Remin weisheng chubanshe 1994), *juan* 11, 381–382.

6. Françoise Sabban, "La viande en Chine: Imaginaire et usages culinaires," *Anthropozoologica* 18 (1993): 79–90.

7. *Shushi* was also used in a short southern dietetic text discussed by Sabban, the *Benxinzhai shushi pu* (Vegetarian recipes from True Mind Study); see Sabban, "La diète parfaite," 10.

8. For a thorough discussion on "scientism" in modern China, see Grace Y. Shen, "Scientism in the Twentieth Century," in *Modern Chinese Religion II: 1850–2015,* ed. V. Goossaert, J. Kiely, J. Lagerwey (Leiden: Brill, 2015), 1:91–140.

9. See Wu's biography in Linda Pomarantz-Zhang, *Wu Tingfang (1842–1922): Reform and Modernization in Modern Chinese History* (Hong Kong: Hong Kong University Press, 1992).

10. Wu Tingfang, "Weisheng xinfa cuoya" (The essentials of the new hygienic method), *Zhongxi yixue bao* 9 (1910): 1–6.

11. Wu Tingfang, "Weisheng xinfa cuoya."

12. Wu Tingfang, "Yanshou xinfa" (1914), in *Wu Tingfang ji* (Collected writings by Wu Tingfang), ed. Y. J. Ting and Z. F. Yu (Beijing: Zhonghua shuju, 1993) 2:542–543. Wu had published an earlier similar but obscure text, *Vegetarian hygiene* (*Sushi weishengxue*), annotated by Ding Fubao (repr., n.p.: Weisheng xueshe, 1914).

13. See Vincent Goossaert, "1898: The Beginning of the End for Chinese Religions?" *Journal of Asian Studies* 65, no. 2 (2006): 307–335.

14. He Baoshan, "Li Shizeng xiansheng yu Gaoyang Qi jia," *Zhuanji wenxue* 57, no. 6 (1999): 36.

15. This work was published only in 1930 when Li recovered his original manuscript from a friend. See "Rou shi lun" in *Guoli Beiping yanjiuyuan yuan wu huibao* (Journal of the National Academy of Beijing) 1, no. 1 (1930): 1–15. This article is reprinted in *Li Shizeng xiansheng wenji* (Works by Mr Li Shizeng) (Taipei: Zhongguo guomindang dangshi weiyuan hui, 1980), 263–278.

16. Li, "Rou shi lun," 4–11.

17. Sun Wen, *Sun Zhongshan quanshu* (Complete works by Sun Yat-sen), vol. 2, *Jianquo fanglue* (Strategies in state building), (1919; repr., Shanghai: Guangyi shuju, 1927), 1–3.

18. Sun, *Sun Zhongshan quanshu,* 7.

19. James Whorton, "Vegetarianism," in *Cambridge World History of Food,* ed. Kenneth F. Kiple (Cambridge: Cambridge University Press 2000), 1558.

20. Donna Maurer, *Vegetarianism: Movement or Moment?* Philadelphia, PA: Temple University Press, 2002, 26.

21. For the movement in the United States, see Richard Shryock, "Sylvester Graham and the Popular Health Movement, 1830–1870," *Mississippi Valley Historical Review* 18, no. 2 (September 1931): 172–183. The US movement would have a great influence on Chinese activists; see Whorton, "Vegetarianism," 1557, 1560–1561.

22. Ulrike Thomas, "Vegetarianism, Meat, and Life Reform in Early Twentieth-Century Germany and Their Fate in the 'Third Reich,'" in *Meat, Medicine and Human Health in the Twentieth Century,* ed. David Cantor, Christian Bonah and Matthias Dörries (London: Pickering and Chatto, 2010), 148–152. Deborah Lupton, *Food, the Body, and the Self.* London: Sage 1996, 123–124. Li Shizeng also noted the trend, see Li, "Rou shi lun," 4.

23. Stephen Hay, "The Making of a Late-Victorian Hindu: MK Gandhi in London, 1888–1891," *Victorian Studies* (Autumn 1989): 75–98; Tristram Stuart, *The Bloodless Revolution: A Cultural History of Vegetarianism from 1600 to Modern Times* (New York: W. W. Norton & Company, 2006), 425. On the impact of Indian immigrants on British

vegetarianism, see Jon Gregerson, *Vegetarianism: A History* (Fremont, CA: Jain Publishing Company, 1994), 77.

24. Jun Shi, "Tianran shenghuo" (Natural life), *Dongfang zazhi,* 14, no. 4–5 (1917): 89–98, 81–92; Yu Zhi, "Su shi yu jingji wenti" (Vegetarian diet and economic problems), *Dongfang zazhi* 14, no. 10 (1917): 83–84. Zhang Xicen (Jun Shi) wrote a number of articles on healthy eating in the magazine in this period clearly to promote vegetarianism.

25. Zhu Kezhen, "Shi su yu shi hun zhi lihai lun" (Pros and cons of eating vegetables and meat), *Dongfang zazhi* 15, no. 11 (1918): 170–172.

26. Ren fu, trans., "Mishi hu? Ruoshi hu?" (Rice-eating or meat-eating?), *Dongfang zazhi* 14, no. 4 (1917): 177–180.

27. Xue Deyu, *Renti shengli weisheng xue tiyao* (Outline of human physiology and hygiene) (Shanghai: Shangwu yinshuguan, 1921), 49–52.

28. "Xuesheng sushi zhi ti yi" (A student's suggestions on vegetarianism), *Beijing daxue ri kan*, November 25, 1917, 3–4.

29. Arif Dirlik, "Vision and Revolution: Anarchism in Chinese Revolutionary Thought on the Eve of the 1911 Revolution," *Modern China* 12, no. 2 (1986): 123–165, especially 155–161, where Dirlik evokes Buddhist ideals and scientism in the anarchists' radicalism.

30. "Shenshi weisheng hui" (Society for sensible diet and hygiene), *Zhongxi yixuebao* 6 (1910): 1–3, especially 2 on the establishment of the restaurant in article 3. See also the report on the inaugural meeting of the Society and the Society's regulations in "Ji Shenshi weisheng hui kaiyi shi" (Report on the inaugural meeting of the Society for sensible diet and hygiene), *Shaoxing yiyao xuebao* 23 (1910): 12.

31. Chen Dingshan, *Chunshen jiuwen* (Reminiscence of Shanghai) (Taipei: Chenguang yuekan chubanshe, 1964), 190. Chen Dingshan (1897–1987) was the son of famous Shanghai early industrialist and novelist Chen Deixian (1879–1940).

32. The first European vegetarian restaurants were set up in the 1870s; see Whorton, "Vegetarianism," 1559.

33. Li's factory suffered loss and had to survive on government subsidy during World War I. See Li Huang, "Liu Fa qingong jianxue de lilun yu shiji" (Theory and practice of the work-study program in France," *Zhuanji wenxue* 16, no. 6 (1970): 23.

34. "Shanghai sushi zhi shiyan" (Experiments on vegetarian diets in Shanghai), trans. Li Zhonghe, *Lingnan nongke daxue nongshi yuekan* 2, no. 9 (1924): 22.

35. "Shanghai sushi zhi shiyan," 22–23. See Chen Jianhua's work on the recruitment of vegetarian chefs, "Huangyan ren chuangban Shanghai Gongdelin," (A native of Huangyan created Gongdelin), "Huangyan xinwenwang," December 30, 2015, accessed October 15, 2016, http://hynews.zjol.com.cn.

36. They were prominent Shanghai cultural and business elite known for their lay Buddhism. The biggest shareholders were the Jian brothers (Zhaonan [1870–1923] and Yujie [1875–1957], owners of a major tobacco company). For the complete list of shareholders, see the 1934 document on the belated registration of the "Xu Yongzuo kuaijishi shiwusuo guanyu Gondelin gongsi buxing dengji (About the belated registration of Gondelin Company by the Xu Yongzuo Accounting Office), Gongdelin Company, Q92-1-171(3): 3–4, 25–28, Shanghai Municipal Archive, Shanghai Municipal Archive, Shanghai. Most of them belonged to the newly established (1918) Buddhist Lodge of Laity (Jushi Lin) in Shanghai. "Shijie fojiao Jushi Lin zuzhi gangyao caoyi yuanqi"

(Origin and Draft of the Organization of the global Buddhist Jushi Lin), *Shijie fojiao Jushi Lin Lin Kan*, 1 (1923): 1–8.

37. More notable events included the reception of the Indian poet Rabindranath Tagore in April 1924 hosted by Commercial Press; the Japanese poet Satō Haruo hosted by the Liangyou Group with the presence of prominent writers such as Yu Dafu, Tian Han, Ouyang Yuqian, and so on. See clips in the Shanghai daily newspaper *Shenbao*, "Gondelin Shushichu zuowan yanqing baojie" (Gondelin Vegetarian Restaurant hosted the media last night), August 29, 1922, 15; "Ge tuanti huanying Tai-Ge-Er choubei hui ji" (Social groups met to organize the welcoming party for Tagore), April 15, 1924, 14; "Xiangren jiji choumu zhenkuan, Jinri zai Gondelin" (Hunanese enthusiastically donated relief charity money today at the Gondelin) July 20, 1924, 14; "Gongdelin xinzhi su yuebing" (Gongdelin makes new vegetarian mooncakes) August 25, 1924, 21; "Gondelin de yige wanshang" (One night at the Gongdelin), July 24, 1927, 23; "Gongdelin Shushichu yanke" (A banquet at the Gondelin Vegetarian Restaurant), October 26, 1930, 16.

38. Ding organized a weekly "congee gathering" in his home in the 1920s and a "Wednesday rice-meal gathering" at Gongdelin beginning in 1923 to promote vegetarianism in Shanghai. Qian Huafo, *Sanshi nian lai zhi Shanghai* (Shanghai in the past thirty years) (repr., Shanghai: Shanghai shudian 1984), 53–55. On Ding's conversion to vegetarianism and his activism, see Liu Xuan, "Tongsu zhishi yu xiandai xing: Ding Fubao yu jindai Shanghai yixue zhishi de dazong chuanbo," PhD diss., Chinese University of Hong Kong, 2013, 110.

39. The Adventist Church recommended abstinence from meat, alcohol, tobacco, and illegal drugs. Miller was a follower of another Adventist, John Harvey Kellogg, known for his creation of the modern American breakfast-food industry. A loyal friend of Chiang Kai-shek, Miller was to establish the Adventist hospital in Taiwan after the war. See Raymond Moore, *China Doctor: The Life Story of Marry Willis Miller* (New York: Harper & Brothers, 1962), 36, 201–202.

40. Moore, *China Doctor,* 126–128.

41. Mi Le Er, *Jiankang shenghuo* (Healthy living) (Shanghai: Shizhao baoguan, 1932), 67–68, 72, 73.

42. The publisher of his translated book, titled *Yannian yishou* (Health and longevity), is a major Christian book publisher in Shanghai, the Shizhao Baoguan (Signs of the Time Publishing House).

43. Mi Le Er, "Mi Le Er boshi lun sushi zhi yi" (The benefits of vegetarian diets by Dr. Miller), in *Guangxi weisheng xun kan*2, no. 13 (1934): 24; Mi Le Er, "Xiandai kexue jie zhi sushi guan" (Vegetarianism from the perspective of modern science), *Luo han cai* 64 (1940): 395–399.

44. Ding Fubao, "Caishi yu roushi zhi youlei" (Pros and cons of vegetable and meat eating), *Sushi tekan* June (1935): 2–3, 21–22; Ding Fubao, *Shiwu zui jingji fa* (The most economic way of [consuming] food) (Shanghai: Yixue shuju, 1945), 24–25.

45. Ding Fubao, "Shiwu yu zaolao" (Food and early aging), *Zhiye yu xiuyang* 3, no. 8 (1940): 162; *Zhenyang chuangzao wo de jiankang shenghuo* (How I create my healthy living) (Shanghai: Yixue shuju, 1942), 44.

46. See also Françoise Sabban, "The Taste for Milk in Modern China (1865–1937)," in *Food Consumption in Global Perspective: Essays in the Anthropology of Food in Honour of Jack Goody,* ed. Jakob A. Klein and Anne Murcott (Basingstoke, UK: Palgrave Mcmillan, 2014), 182–208, especially 189–190; also Susan Glosser, "Milk for Health, Milk for Profit: Shanghai's Chinese Dairy Industry under Japanese Occupation," in

Inventing Nanjing Road: Commercial Culture in Shanghai, 1900–1945, ed. Sherman Cochran (Ithaca, NY: Cornell East Asia Series 103, 1999), 207–233.

47. Published in the *Chinese Social and Political Science Review* (Peking: Chinese Social and Political Science Association, 1927), 11:56–81. A shorter Chinese version appeared in the Peking Union Medical College monthly journal *Xieyi tongsu yuekan* (4, no. 3 [1927]: 1–14) in the same year. There were many requests for offprints of this article; see the three files on Wu Xian in the PUMC Archive in Beijing, 3428 (2) 1931–1960, 3428(3) 1931–1969, 3428 (4) 1931–1969. The work was quoted in T. Swann Harding, "Diet and Disease" *Scientific Monthly* 26, no. 2 (1928): 150–157.

48. Wu cites the 1925 New York edition on 59 of his article.

49. Wu, "Chinese Diet," 74, 77, 81.

50. Hsien Wu and Daisy Yen Wu, "Growth of Rats on Vegetarian Diets," *Chinese Journal of Physiology* 2 (April 1928): 173–194, esp. 192.

51. At least four articles were published on his experiments with vegetarian and omnivorous rats in the *Chinese Journal of Physiology* between 1929 and 1938.

52. Mary B. Bullock, *An American Transplant: The Rockefeller Foundation and Peking Union Medical College* (Berkeley: University of California Press, 1980), 109n2.

53. See Tse-tsung Chow, *The May Fourth Movement: Intellectual Revolution in Modern China* (Cambridge, MA: Harvard University Press, 1960). Intellectuals growing up in the 1910s and 1920s argued for adopting Western science and democracy to replace traditional Chinese values.

54. Helen Zoe Veit, *Modern Food, Moral Food: Self-Control, Science, and the Rise of Modern American Easting in the Early Twentieth Century* (Chapel Hill: University of North Carolina Press, 2013), 190.

55. On the trend of building "hard" objective social facts in Republican China, see Tong Lam, *A Passion for Facts: Social Surveys and the Construction of the Chinese Nation-State, 1900–1949* (Berkeley: University of California Press, 2011), especially 149–158.

56. His first report on a survey done in Peking was published in the report series of the same journal in 1928.

57. The movement was heavily subsidized by the Rockefeller Foundation. See Bullock, *American Transplant,* 75n86, 150. Wu Xian sent his scientific work to James Yen and offered to send a collaborator to carry out nutritional experiments in 1930. Letters dated March 27 and May 2, 1930, Folder: Wu Xian 3428 (2), 1931–1960, 104–105, 172, PUMC Archive, Beijing.

58. The fund was administered by the China Foundation (established in 1924). See Yung-chen Chiang, *Social Engineering and the Social Sciences in China, 1919–1949* (Cambridge University Press, 2001), 232; Yang Cuihua, *Zhongzi hui dui kexue de zanzhu.* (The contribution of the China Foundation to Science) (Taipei: Academia Sinica, Institute of Modern History, 1991), 86, 191; Peter Buck, *American Science and Modern China, 1876–1936* (Cambridge: Cambridge University Press, 1980), chap. 7.

59. Wu Xian, *Yingyang gailun* (Overview of nutrition) (Taipei: Commercial Press, 1954), 88. The Henry Lester Institute in Shanghai also published a series of similar surveys in the 1930s not listed by Wu. Lesser-known surveys have recently been republished in the first volume of *Minguo shiqi shehui diaocha congkan: Yilao weisheng yu shehui baozhang juan* (Social surveys in the Republican Period: On medicine, hygiene, and social protection) (Fuzhou, China: Haixia chuban faxing jituan, 2014); see especially the wartime social surveys.

60. Wu Xian, "Woguo ren zhi chifan wenti" (Rice-eating problem of our people), *Duli pinglun* 2, no. 2 (1932): 5–19.

61. Tao Ming (Wu Xian), "Miaofeng shan zagan," *Duli pinglun* 240 (1937): 18–19.

62. Tao Ming (Wu Xian), "Dingxian jianwen lu," *Duli pinglun* 4 (1932): 14, 18.

63. See Zhang Junjun, *Minzu jiankang yu yingyang huanjing* (National health and nutritional environment) (Shanghai: Zhonghua shuju, 1943).

64. William H. Adolph, "Vegetarian China," *Scientific American* 159, no. 3 (September 1938): 133–135. The five translations were published between 1940 and 1947.

65. William H. Adolph, "Diet Studies in Shantung," *China Medical Journal* 37 (1923): 1013–1019; William H. Adolph, "A study of North China Dietaries," *Journal of Home Economics* 17, no. 1 (1925): 1–7.

66. Adolph, "Vegetarian China."

67. Michael Worboys, "The Discovery of Colonial Malnutrition between the Wars," in *Imperial Medicine and Indigenous Societies*, ed. David Arnold (Manchester, UK: Manchester University Press, 1988), 208–225; David Arnold, "The 'Discovery' of Malnutrition and Diet in Colonial India," *Indian Economic and Social History Review* 31, no. 1 (1994): 1–26; Melanie DuPuis, "Angels and Vegetables: A Brief History of Food Advice in America," *Gastronomica* 7, no. 3 (2007): 34–44.

68. In his earlier articles, Adolph was "surprised to discover such a large variety of foodstuffs in the North China dietary," and estimated that "the Oriental suffers less from lack of meat than does the Occidental with his excess," Adolph, "Diet Studies in Shantung," 1016, 1019; Adolph, "Study of North China Dietaries," 3, 6.

69. J. L. Buck, *Chinese Farm Economy: A Study of 2866 Farms in Seventeen Localities and Seven Provinces in China* (Chicago: University of Chicago Press, 1930), 365.

70. Luo Dengyi, *Shushi lun* (On vegetarianism), *Dongfang zazhi* 28, no. 23 (1931): 51–59.

71. "Minimum Nutritional Requirement for China," Special Report Series no. 10 (Shanghai: Chinese Medical Association, 1938).

72. Wu Xian, *Shiwu chengfen biao* (Tables on food nutrients) (Changsha, China: Commercial Press, 1940).

73. "Quanguo shengchan huiyi jueyi ge an youguan yingyang gailiang" 全國生產會議決意各案有關營養改進 (Resolutions on nutritional improvement at the National meeting on production) for file 028000003172A (1943); "Yingyang yanjiu huiyi gexiang ti'an ji jihua an" 營養研究會議各項提案及計畫案 (Projects and proposals in the Meeting of Nutritional Research [1941]) Academia Historica (Taipei), files 028000003172A (1943), 028000003182A (1941).

74. Vegetarianism has recently become a new trend for educated urbanites in today's China who are concerned with environmental and food safety issues. See the popular book by Ye Ping, *Xin sushi zhuyi: Chengshi guizu shenghuo qunti de yingyang zhexue*y (New vegetarianism: The nutritional philosophy for the daily life of urban aristocratic communities) (Beijing: Zhongguo qing gongye chubanshe, 2004), in which Buddhism is rehabilitated.

11 | From Civilizing Foods for Nourishing Life to a Global Traditional Chinese Medicine Dietetics

Changing Perceptions of Foods in Chinese Medicine

Volker Scheid

In the fall of 1883, forced to stay indoors by the colder days of the approaching winter, a retired scholar of whom we only know his pen name, The Unofficial Historian of the Orchid Hall (Lanting Yishi), came upon the *Materia Medica of Appraised Foods* (*Shijian bencao*), a dietary manual by the famous physician Fei Boxiong (1800–1879). After reading the text, our scholar felt compelled to express his gratitude for the author's kindness and compassion. Teaching him about the benefits and harms associated with the consumption of various foods had turned eating, at least for this reader, from something one simply does into a more self-conscious way (*dao*) of nourishing life (*yangsheng*).[1]

Fast-forward a century and a half and the question of what to eat occupies the minds of affluent Westerners in strikingly similar ways. However, in an age of globalization, foods and foodways from other cultures are becoming an ever more important resource in our attempts at ensuring a long and healthy life. Chinese dietary practices offer a particularly rich

resource to be mined for this purpose, delivering superfoods such as goji berries and turmeric, healthy cooking based on the theory of the five phases (*wu xing*), and entire systems of dietetics for a more holistic lifestyle. Yet, even as they claim to make available to their readers the ancient wisdom of the East, authors of contemporary Chinese dietary manuals must *perforce* translate those foodways into contemporary meaningful concepts and practices.

But that was ever so. As the reactions of the Unofficial Historian of the Orchid Hall attest, Fei Boxiong faced the same task in his attempts to guide late imperial Chinese readers on their path toward a healthier life. The goal of this chapter, then, is to shed some light on the differences that nevertheless exist between both cases. Specifically, I will explore how Chinese dietetics—a term I shall use as a shorthand for designating use of food for maintaining a long and healthy life—has changed between the mid-nineteenth century and the present. However, rather than attempting a detailed historical review, I will present two snapshots that I think capture quite well some of the essential transformations at play.

The first part of the chapter focuses on Fei Boxiong's late-nineteenth-century vision of dietetics contained in two texts he published in the 1860s: the *Materia Medica of Appraised Foods* cited above and *Refined Medicine Remembered* (*Yichun shengyi*), a brief treatise on internal medicine. In the second part of the chapter I jump to the turn of the twenty-first century to examine the global traditional Chinese medicine dietetics developed by Carl-Hermann Hempen and Ute Engelhardt in their textbook *Chinese Dietetics* (*Chinesische Diätetik*). The concluding section compares how both sets of authors constitute the value of foods in the context of their larger projects of revitalising Chinese dietetics at distinctly different historical moments.

There are several reasons I have chosen these specific texts for my comparison. First, both sets of authors and their intended readership have much in common despite the time and distance that separates them. Fei Boxiong was a sixth-generation hereditary physician widely praised by his peers for also being an accomplished scholar whose medical texts are explicitly educational in orientation. Carl-Hermann Hempen is a biomedical physician and traditional Chinese medicine (TCM) practitioner, and Ute Engelhardt a sinologist. Both are students of the well-known sinologist Manfred Porkert, one of the first Western scholars to make a serious attempt at translating the concepts of Chinese medicine to modern readers,

and have cooperated as influential teachers of Chinese medicine in the German-speaking world since the 1980s.

Second, even as they claim to transmit age-old wisdom, both sets of authors are actively engaged in reconstructing medicine and dietetics during moments of perceived cultural crisis. For Fei Boxiong the immediate crisis was that of the Taiping Rebellion (1850–1864) and its brutal suppression by the imperial armies, a civil war that devastated southern China and forced Fei and his family to flee their hometown for four years, from 1860 to 1864. Fei's writings on medicine and diet are explicit attempts to recover the essence of a culture he treasures but perceives to be in danger of being lost in a practically meaningful way.[2] A similar goal underpins the emphasis on "tradition" in the context of Western and more lately global attempts to forge a holistic culture, science, and medicine, a vision that has consistently informed the search for alternatives to modern forms of rationality during the twentieth century. Facilitated by scholars such as Porkert, Chinese medicine emerged as a powerful model for this critique in the 1950s.[3]

Despite these similarities there are nevertheless important differences in the way both sets of authors imagine Chinese dietetics as both philosophy and practice and, by extension, between the (medical) cultures and foodways that sustain these visions. Fei Boxiong belonged to the last generation of Chinese intellectuals for whom the modern and the West had not yet become inevitable points of reference in their attempts to define China even as he embarked on a concerted effort to define the very essence of Chinese medicine and dietetics. This essence, according to Fei Boxiong, is constituted of situated practices rooted in processes of ongoing refinement. Participants in these practices, from human actors to foods and medicines, possess distinctive natures. These natures, however, do not determine effects but constitute potentialities that can and must be developed situationally. Like human beings, foods and medicines are therefore not intrinsically good or bad but take on these characteristics in the context of concrete usage. They become increasingly good the more they are integrated into human practices that embody virtues such as harmony and moderation. These virtues also, however, are not postulated as a priori goals. Rather, they reveal themselves through processes of self-cultivation that seek to distil the quintessence of native intellectual, medical, and culinary traditions. Such distillation takes time; and while it is a civilizing effort aimed primarily at transforming humans, it extends

perforce to medicines and foods, for without them a civilized *and* vitalized life is not imagined possible.

Despite much apparent similarity, the universalist TCM discourse of the present created by and embodied in texts such as *Chinese Medicine Dietetics* proceeds from a very different starting point: namely, a definition of China and Chinese dietetics in contrast to the modern and the West. It views Chinese medicine as intrinsically superior to biomedicine in the sense that it is less aggressive, and, in turn, dietetics is viewed as superior to medicine for the same reasons. Yet, at the same time, TCM dietetics is turned into a specialty that in its practices and modes of self-presentation embraces the ontology, values, and goals of the positivist sciences that TCM otherwise tends to critique. Specifically, it is premised on the perception that things possess stable essences, that these essences can be known and described, and that this knowledge is the basis for effective action. Captured through the discursive categories of TCM, each food or medicine thus possesses distinctive characteristics that fix it as either good or bad in relation to the broader goals of dietetics.

Within the context of the wider thematic addressed in this volume, my snapshots—especially when viewed as end points of a continuum—add to a deeper understanding of how foods and medicines assume moral agency within distinctive modernizing practices. To that end, they may be read in particularly close conjunction with the chapters by Lawrence Zhang and Hilary Smith.

If I focus on transformations in medical and dietetic styles of practice and the philosophies that support them, Zhang's and Smith's chapters explore the process of medical modernization through the lens of two specific foods—tea and milk. They can thus showcase in greater detail how the diffusion of biomedical ways of knowing into China fundamentally transformed traditional values and usage, sometimes—as in the case of tea—turning them into their very opposite. Zhang's contrast between the modulated evaluation of tea's effects on individual constitutions vis-à-vis the attribution of determinate actions rooted in its constituents mirrors the opposition between Fei Boxiong's emphasis on situated practice and the weight accorded to correctly knowing things by TCM dietetics. Likewise, Smith's analysis of how cultural values become embedded in dietary practices is, if not examined in quite as much detail, then at least hinted at in the efforts of my actors to reconstitute dietetics in moments of perceived cultural crisis. Fei Boxiong's writings are deeply rooted in late

imperial elite Jiangnan culture even as his vision is quite unselfconsciously universal in its aspirations. In the early twenty-first century, Chinese dietetics has a global presence. Yet, despite its claims to embody a more complete understanding of the world than either traditional or modern Western dietetics, it has contracted into something that is more narrowly Chinese.

Fei Boxiong: Distilling the Quintessence of Medicine and Dietetics in Late Imperial China

Fei Boxiong was born in 1800 into a well-off family of doctors that had established a thriving medical lineage in the small Jiangsu town of Menghe, situated about halfway between Shanghai and Nanjing.[4] Turning to medicine only after he had failed the provincial examination in 1832, by the end of his life he had become the most famous physician in southern China, whose clients included members of the uppermost echelons of the imperial bureaucracy.[5] Fei Boxiong's ideas were formative in the development of the well-known Menghe current of Chinese medicine (*Menghe xuepai*) and have influenced clinical practice in China and abroad into the twenty-first century.[6] They are accessible to us in a number of works he wrote toward the end of his life, a series of case records published posthumously by his family, and an ever enlarging corpus of secondary commentary works.[7] Read together these texts show a generalist at work who treated all kinds of conditions in men, women, and children. They also point toward a self-conscious effort at revitalising Chinese medicine during a moment of perceived crisis by distilling and transmitting its vital essence.

Fei Boxiong's *Refined Medicine Remembered* sets out most incisively how this distillation is to be carried out.[8] In Chinese the word *chun,* carefully chosen by Fei to anchor his project of medical revival, denotes something unadulterated and therefore pure and simple but also the actual process of refinement, purification, and distillation that produces a quintessence. In Confucian discourse the term *chun* was commonly used to designate the authentic and orthodox currents of tradition. In the medical domain, according to Fei Boxiong, *chun* "refers to the appropriate [application] of the fundamental patterns of medical [knowledge], and not to novel or extraordinary uses of medicines." It is also the ethically charged

activity of "striving for merit without excess" that Fei perceived was in danger of being lost in the pursuit of individual difference.

For Fei Boxiong, becoming an effective physician was thus not a matter of learning a set of rules or propositions. Rather it was a process of transformation that accepted complexity as an inevitable starting point of anything problematic but aimed at effective action by reducing this complexity to its intrinsic dynamic. Hence, to develop himself as an effective practitioner a physician must sort through the many different doctrines and practices of the tradition and distil from them a refined essence of core principles that becomes the fulcrum from which effective action in the present can be launched. This is because the complex manifestation of a clinical problem can then be understood as unfolding a small number of quintessential life processes.

The Taiping Rebellion, which almost overthrew the Qing dynasty and the traditions it sought to embody, constitutes the immediate historical context for Fei Boxiong's writings on medicine. However, the searching for and flaunting of individual distinctiveness that Fei critiqued was characteristic of broader social and cultural transformations in China during the early modern period. In the medical domain, certainly, the existence of competing currents (*xuepai*) had become an accepted reality that addressed but failed to resolve the problematic tension between the claimed universality of canonical knowledge and the ever-changing nature of diseases, patient populations, and local contexts of practice.[9]

Against this background Fei Boxiong's advocacy of searching out the fundamental values of tradition suggests an affinity with the agenda of evidential scholarship (*kaozheng*) and Han learning (*Hanxue*) that dominated intellectual life during the Qing.[10] As the slogan "return to the ancients" (*fugu*) indicates, many scholars at the time—and many physicians, too—looked toward the oldest sources of tradition as containing fundamental truths that had been eroded by later Song Neoconfucianist writers and their assimilation of Buddhist and Daoist ideas.

On closer inspection, Fei Boxiong took a more balanced view. He warned against the potential bias of one-sided doctrines, widely associated with physicians of the post-Song period, but emphasized the clinical relevance of their ideas. He was intimately familiar with the Han dynasty medical canons but did not think their formulas were necessarily useful for treating contemporary patients. He actively embraced the innovations of warm disorder (*wenbing*) therapeutics that had recently emerged in

nearby Suzhou and its mild and moderate style of prescribing without, however, abandoning older modes of thinking about feverish disorders rooted in the Han dynasty *Treatise on Cold Damage* (*Shanghan lun*).[11] Hence, under Fei Boxiong's leadership, Menghe became known as the only place in China where physicians successfully transcended the often bitter polemics between advocates of cold damage and warm disorder therapeutics.[12] Moreover, Fei Boxiong was not merely influenced by Confucian thinking. In his youth he studied under a Daoist teacher, and his two most important references within the field of late imperial medicine—Yu Chang (1585–1664) and Cheng Guopeng (1680–1733)—had both been Buddhist monks who explicitly advocated the assimilation of Buddhist ideas and practices into the medical domain.[13]

One might be tempted, therefore, to view Fei Boxiong's advocacy of distillation and refinement as a reworking of the syncretic (*zhezhong*) style favored by Ming dynasty medical authors.[14] More openly and decisively than Fei, many of these writers embraced Confucian, Buddhist, and Daoist doctrines as all having something to offer to medical practice, and they, too, struggled with the problem of how to reconcile the differences and tensions between the growing corpus of medical ideas and practices.[15] However, if Ming authors had aimed at a comprehensive synthesis that expressed itself in lengthy treatises often running to many volumes, Fei Boxiong composed brief texts that advocated a movement in precisely the opposite direction: toward an ever deepening understanding of the timeless principles underlying all life and stripped of all unnecessary excess. He referred to the resulting medical practice as the medicine of "harmonization and moderation" (*he huan*).

Like *chun, he* and *huan* were carefully chosen terms that communicated Fei Boxiong's intentions at several different registers of meaning. They appealed, for instance, to the self-perception of Fei's southern clientele and their preference for mild-acting medicinals.[16] He and Huan are also the names of the first physicians recorded in Chinese history, signaling to educated readers a grounding of Fei's ideas and principles in ancient antiquity. As an educator Fei argued that understanding the essence of a clinical problem reduces even complex issues to simple patterns. These can be responded to by equally simple "moderate," "gentle," or "slow-acting" (*huan*) treatment strategies that are effective because they are "harmonious" (*he*) and therefore able to return the ailing body itself to precisely such a desirable harmonius condition. To this end, Fei Boxiong specifically

embraced the use of ordinary (*pingdan*) substances, by which he meant a number of different things: medicinals that were common, everyday, and cheap to obtain; the combining of simple medicinals into an effective and balanced formula without many side effects; and also, specifically and not at all accidentally, the use of food as medicine and of medicine as food.

Food as Medicine: Fei Boxiong's Formulas and Style of Medical Practice

Many famous Chinese medical formulas include ingredients that are also commonly used in cooking, such as fresh ginger, dates, and spring onions. Spices such as cinnamon, cloves, and nutmeg were likewise regularly used for their medicinal effects. Indeed, a few well-known formulas, such as the licorice, wheat, and jujube decoction (*gan mai dazao tang*) from *Essentials of the Golden Casket* (*Jingui yaolüe*), are composed almost entirely of food items.[17] Drawing a precise dividing line between foods and medicinals in the Chinese medical tradition is therefore not really possible. However, what distinguishes Fei Boxiong from almost all other physicians I am aware of is his deliberate emphasis on making foodstuffs an essential ingredient of everyday clinical practice. This emphasis materially embodies the medicine of harmonization and moderation at the level of clinical prescribing and follows directly from the self-fashioning process of distillation Fei Boxiong deemed necessary to enable such practice.

In as much as such distillation invariably takes the medical canons as a starting point, Fei clearly modeled himself on principles of practices first outlined in the *Inner Canon of Huangdi* (*Huangdi neijing*). There, in a passage that explains the agency of various kinds of medicines, the *Inner Canon*'s authors had established associations between effectiveness and potency that are the opposite of what we today—and many readers of Fei's own texts, for that matter—would take to be self-evident: namely, that the more potent a medicine, the lower its usefulness in general clinical practice:

> Medicinally potent drugs can eliminate six out of ten illnesses. Medicinally normal drugs can eliminate seven out of ten illnesses. Medicinally weak drugs can eliminate eight out of ten illnesses. Drugs without marked medicinal effectiveness can eliminate nine out of ten illnesses. Grains, meat, fruits, and vegetables are suitable for dietetic nourishment against all

> illnesses. But even with these, certain limits should not be exceeded. Otherwise the proper [*qi*] of the [patient] might be harmed.[18]

A similar evaluation is famously found in the *Classic of Materia Medica* (*Bencao jing*), which grouped medicinals into three categories according to their level of toxicity (*du*). The most valued medicinals were those with the lowest levels of toxicity, medicinals that could be used daily to prolong life. The lowest class of medicinals were the most immediately toxic ones, which should be employed to treat only acute diseases.[19]

Fei Boxiong aligns these principles with his own maxims of harmonization and gentleness, extending them backward into the period even before the compilation of the *Inner Canon* and the *Classic of Materia Medica* while asserting their continued relevance to the present: "Poisonous drugs cure five out of ten illnesses, fine drugs cure seven out of ten and this, too, refers to the harmonizing method and moderate treatment."[20]

The formulation of actual prescriptions in *Refined Medicine* demonstrates that for Fei Boxiong these principles were not simple rhetoric. Altogether *Refined Medicine* contains almost two hundred formulas composed by the author that treat many different disorders, ranging from fevers, malaria, and jaundice to headaches, exhaustion, and emotional problems. Most of these formulas were modeled on well-known classical precedents even as they also attempted to realize the principles of moderation and harmonization through technologies such as dosing, formula composition, and administration, and specifically also the use of foods as medicinals. For with respect to medicinals drawn from the natural world, what might be more simple, plain, and everyday than the foods we eat daily to nourish our lives?

Altogether Fei Boxiong thus employs twenty-eight different food items as ingredients of his medical formulas, ranging from ginger juice and rice to abalone and pig's kidneys, and he includes at least one such item in 68.21 percent of the formulas in *Refined Medicine* that he composed himself. The inclusion of food items in medical formulas is not at all uncommon in Chinese medicine and is widely explained via the medicinal properties that these foods possess. In Fei Boxiong's formulas, however, I believe they should be viewed as an expression of the process of self-cultivation that he places as the heart of medical practice. For while the medicinal properties of a food item itself are relatively weak, especially if they are included in a prescription of ten or more ingredients, it is their very everydayness that

makes them essential to the process of writing harmonious and moderate formulas.

Yet, as the authors of the *Inner Canon* had already noted, "even with these, certain limits should not be exceeded. Otherwise the proper [*qi*] of the [patient] might be harmed."[21] The *Materia Medica of Appraised Foods* shows that Fei Boxiong was acutely aware of that danger, too.

Medicine as Food: The Materia Medica of Appraised Foods

Like the use of foodstuffs as medicines, taking medicine in the form of food has a long history in China. The *Rites of Zhou* (*Zhouli*) already described dietetic physicians (*shiyi*) as one of four different classes of physicians whose task it was "to care for the balance of the six foodstuffs, six drinks, six dishes, hundred provisions, hundred soups, and eight precious dainties of the king."[22] Although no longer extant, a range of pre-Han and Han dynasty texts addressed themselves to healthy eating and drinking by discussing the properties of common foodstuffs, their preparation, and their use in the treatment of illness. Over subsequent centuries dietary materia medica developed into a genre of its own, while generalist materia medica such as Li Shizhen's *Systematic Materia Medica* (*Bencao gangmu*) assimilated an ever increasing number of foods into their specialist domain. So much so, in fact, that by the late Qing the production of new dietary materia medica substantially declined.[23]

One of the few new dietary materia medica published during the Qing was *Materia Medica of Appraised Foods,* which from the late Ming onward circulated in various versions attributed to a range of different authors.[24] Chai Yi's four-volume edition of 1741 is widely considered today to be the final one of these. A different book with the same title attributed to Fei Boxiong was also, however, published by the Fei family in 1883, four years after Fei Boxiong's death.[25] It consists of three sections, of which I will discuss only the first two: appraised foods and food-type recipes for common ailments. The third section contains a small number of prescriptions for use in obstetrics, for expressing pox toxin in children, and for prolonging life. These prescriptions are so substantially different from the remainder of the text that they deserve to be discussed more fully on their own.

The materia medica section of the book lists ninety-five commonly used food items in a series of short paragraphs outlining their potential value and contraindications. If the volume's title—*Materia Medica of Appraised Foods*—inserts it into a long line of Chinese dietary materia medica, its actual content is, in fact, closer to that of household dietetic guides. Such guides, which aimed to instruct households in the use and combination of food items, date back at least to the Song dynasty. Jia Ming's (1268–1374) *What One Should Know about Food and Drink* (*Yinshi xuzhi*) is widely considered as having shaped the genre, and Fei Boxiong closely follows Jia Ming in terms of his stated goals and the book's organization.[26]

However, unlike other dietary materia medica or Jia Ming's guide, all of which discuss foods in the same way as one would a medicinal, the Fei family text does not discuss foods as if they were medicines. While it outlines a food's medicinal values, it often expends more space on warning against potentially harmful effects accruing from excessive or even sometimes short-term consumption. The entry on (sour) plums (*meizi*) is typical. "They stop thirst and generate yang fluids. Eaten excessively they destroy the teeth and harm the sinews. People taking foxglove root [*dihuang*] especially must not eat them. Mume plums calm roundworms and stop diarrhea. They hold back swellings and must not be eaten excessively."[27] Very few foods are described in entirely positive terms: nonglutinous rice, yam's root, longan fruit, pine kernels, and water. All other foods, including grains, are viewed as deserving a more carefully considered assessment: "Barley: Cooked it is beneficial, but when fresh it is cool and harms people. Eaten frequently it gives great strengths, promotes walking and prevents the hair from going white. It also treats *gu* distension. Barley sprouts dispels accumulation, build the stomach, broaden the center. Eaten too much it consumes the kidneys."[28]

Besides discussing the benefits and potential harm caused by various foods, the text also provides advice on food hygiene and safety: what kind of seafood or meat to avoid, for instance, or how to discriminate between mushrooms that can be eaten safely and those that cannot. There is also information about the relationship among food, climate, and personal constitution; how to best prepare certain foods in order to mitigate their harmful effects; and which foods and medicines to combine and which not. Thus, black soybeans should not be eaten by children under ten or people with spleen deficiency. Those with clogged *qi,* the mad, and little

children should not eat chestnuts too often, even when dried in the sun and then stir-fried, the best way to prepare them for human consumption. Wheat noodles are said to be good for people living in the north but less good for people in the south because their nature is damp and hot and thus exacerbates the harmful effects of the local climate.

If many of these suggestions directly apply key principles of Chinese medical thought to food and drink, others appear to be derived from folk knowledge or magical thinking. We are told, for instance, "All fruit that [appears] abnormal must have snakes [living below the] root [of the plant] and is inedible." Servants and craftspeople are advised against eating peach kernels. "Any fowl that does not stretch its legs or close its eyes when dying is toxic and inedible." Buckwheat is said to cause the eyelashes to fall out when eaten together with pork, and the poison of blowfish is apparently augmented if the fish has purple or red spotted eyes, in which case it must not be eaten even if properly prepared.[29]

There are also instances of purely empirical observation reported without any attempt at explanation. Rinsing one's mouth with tea is said to firm the gums. The toxicity of the blowfish is moderated by Chinese olives and reed root (*lu gen*) juice. However, those who eat it while also taking catnip (*jing jie*), chrysanthemum flowers (*ju hua*), or aconite (*fu zi* or *wu tou*) will die.[30]

Meats, seafood, alcohol, fruit, sugars, and other spices are all considered part of a normal diet, and one finds none of the one-sidedness of modern dietary manuals. There are no superfoods, and no diet is suitable for everyone. Instead, the author recommends a simple diet based on grains and vegetables to which other foods should be added sparingly. Here, too, there is a distinct emphasis on blandness, on harmonization and moderation.

The recipes in the second section are intended for the treatment of actual disease rather than for use in everyday life. For that purpose they are organized under headings such as wind, cold, dampness, *qi,* blood, excess, or deficiency that specify the primary disease cause or manifestation. Hence, if *Refined Medicine* assimilates a range of foodstuffs to the prescription-based treatment of specific illness patterns carried out by specialist physicians, the *Materia Medica of Appraised Foods* is a home manual or first aid resource that addresses itself to lay people with a basic knowledge of Chinese medical principles. To that end, it incorporates widely available medicines such as dried ginger, ginseng, Chinese angelica root, and, on one occasion, goji berries into the preparation of foods such

as congees, soups, wines, or meats: "Goji congee: Treats hyperactive liver and feeble blood in liver people. Take 100 ml of Ganzhou goji berries and 300 ml of rice, cook a congee, and eat. Another method is to pick the leaves, cook a congee and eat. Add a little salt and take on an empty stomach."[31]

No information is provided as to how precisely these prescriptions were shared between the Fei family and their patients, or from where this knowledge was derived. They may be a collation of recipes used locally, or they may be recipes that were given to patients for everyday afflictions such as common colds or haemorrhoids, or for long-term treatment once an individualized formula was no longer considered necessary by either doctor or patient. Yet, when read together with *Refined Medicine,* the food items and recipes in the *Materia Medica of Appraised Foods* provide a point of access for understanding how Fei Boxiong viewed and managed the transition from physician to patient/family managed health care, a term that in this context I take to mean not only the management of illness but also of health, that is, of *yangsheng* and vital nourishment.

Food, Medicine, and Nourishing of Life

In *Refined Medicine* Fei Boxiong makes the case that effective medicine—medicine that seeks to cure as well as to maintain health without causing further disease through its interventions—should be centered on the principles of harmonization and moderation. In the composition of medical formulas these principles were realized through a combination of different strategies, one of which was the inclusion of one or more food items. By doing so Fei Boxiong gave practical meaning to the *Inner Canon*'s assertion that medicinals with the least marked effectiveness were indicated for the largest number of medical conditions. In addition, adding a food item to a formula might also be construed as initiating the next step in the treatment process, namely the warding off of future disease and the transition from the management of illness to the nourishing of life. Here, too, Fei Boxiong attempted to practice what the *Inner Canon* preached, namely that even though food items were important for nourishing life, they should be consumed moderately and within limits.

Materia Medica of Appraised Foods makes available the tools for this next step. It teaches patients to use food judiciously and to maintain a simple and balanced diet. It also provides them with the means for a food-based

approach to managing everyday healthcare problems. Only if this fails is professional help—based on the more potent medicines prescribed by doctors—required. This knowledge, as The Unofficial Historian of the Orchid Hall explains in his foreword, turns mere eating and drinking into the *dao* of nourishing life. Following Hansen, the notion of *dao* in this context refers to a finely tuned capacity for making situationally appropriate judgments that guide action. This capacity depends on factual knowledge such as that elaborated in the Fei family *Materia Medica of Appraised Food*. However, such knowledge acquires meaning only within the context of the broader situated practices in which it is enacted. For Fei Boxiong the *dao* of eating—just like that of medicine—is thus merely one aspect of the broader *dao* of nourishing life. The guiding principles of this *dao* are moderation, balance, and an appreciation of the simple and bland (*dan*), principles that are not readily apparent but reveal themselves in and through a process of distillation that aims at refinement.

There are some foods and medicines that appear to embody these principles in their very nature. Poria (*fu ling*), a tasteless fungus growing in the root of pine trees and the bland medicinal par excellence, not surprisingly is one of the most commonly used substances in Fei Boxiong's formulas and prescriptions. Among staple foods only nonglutinous rice, yam's root, and water are similarly endowed. Overall, however, it is only through the cultivation of the *dao* of nourishing life that medicines and foods might be integrated into a wholesome life. Or, to put it another way, it is only through the *dao* of nourishing life that medicinals and foods are refined and thus become part of the larger civilizing project of which Fei Boxiong speaks. He is explicit, furthermore, that there are no shortcuts to realizing this *dao,* no miraculous drugs, and, one is tempted to add, no superfoods: "There exist no miraculous methods in the world, only plain ones, and the perfection of the plain is miraculous. If on the contrary one is dazzled by the different manifestations [of disorders], taking them for new ones, hence uses [medicinals] that disregard the norm in the desire for immediate effects, one will on the contrary speed up peril. This is because of not [adhering to] harmonization and moderation."[32]

In Fei's writings virtuosity is equated with an ability to respond flexibly and appropriately to any situation. Such virtuosity demands to withdraw as much as possible from what is fixed and already defined and to cultivate an openness to change and transformation. In humans such virtuosity is

acquired gradually through processes of distillation; but we might say the same, perhaps, about foods and medicines. Precisely because the bland and everyday allow for the greatest degree of flexibility in this process, they are also the most highly prized.

Global Chinese Dietetics in the Twenty-First Century

The global diffusion of TCM does not, overall, embrace this vision but feeds precisely on many of those impulses that Fei Boxiong was writing against: the lure of the strange, the exotic, the unfamiliar, and also of the especially powerful. In Mao Zedong's famous words, Chinese medicine is a treasure trove that hides therapeutic gems of value to all mankind,[33] and nothing could symbolize that value better than the Nobel Prize recently awarded to Tu Youyou for her discovery of the antimalarial compound artemisin from sweet wormwood (*qinghao*), a well-known ingredient of the traditional Chinese materia medica.[34] Here, too, distillation is involved—although one that hopes to stabilize the enduring essence of things rather than one that seeks access to the inexhaustible fountain of change and transformation.[35] Hence, instead of emphasising the simple everyday practice by which the antimalarial potency of sweet wormwood might be distilled—namely by wringing out the plant to produce a juice—its powers are now stabilized within a single chemical compound rendered extraordinary—and thereby extraordinarily expensive—via integration into industrial-scientific modes of drug production.[36]

The specific practices, institutions, and politics of this very different mode of distillation are too complex to discuss here in detail. As Sean Lei has shown, they invariably rely on forms of investigation, standardization, and social appropriation that endow Chinese medicine and its medicinals with distinctive and stable values.[37] The same processes of value creation are at work also in the integration of Chinese foods and dietetics into modes of consumption characteristic of a twenty-first-century global elite that is able to assimilate these often expensive products into their particular lifestyle and healthcare regimes.

This shift of emphasis and value from localized practices to stable essences also underpins the writing of *Chinese Dietetics,* a text published in German and aimed at professional TCM practitioners. Written by a sinologist and one of Germany's leading TCM physicians, neither its content,

format, nor mode of presentation stands out from other contemporary TCM texts apart, perhaps, from its use of a specialized lexicon of technical terms. Created by the authors' teacher, Manfred Porkert, this lexicon translates Chinese medical terms into Greek and Latin so as to make them equivalent—at least in appearance—to the terminology employed in modern biomedicine. Detached from specific authors, texts, or currents of practice and communicated through dead languages that actively prevent the linguistic play of references we glimpsed, if only superficially, in Fei Boxiong's choice of key terms, the knowledge contained in *Chinese Dietetics* is thereby made to appear timeless and eternal. This effect is further amplified by a number of related rhetorical strategies. These include dating the origins of the practices described back to the distant past (specifically, the third century BC), outlining a history of development that merely adds specifics to a model established already at its moment of creation, and opposing TCM to science and biomedicine while simultaneously emphasizing TCM's own scientific nature.

The discursive strategies that create *Chinese Dietetics* as timeless universal knowledge are by no means unique to the authors of this particular text. One can see them at work in the pages of the eighteenth-century *Golden Mirror of the Orthodox Lineage,* an imperially sponsored attempt to define a medical orthodoxy,[38] as much as in the contemporary efforts, strongly supported by the Chinese government, to construct TCM as a global medical system complete with its own World Health Organization–approved International Classification of Diseases categories.[39]

Likewise, just as authors of late imperial materia medica assimilated foods into their collections or, alternatively, modeled texts in the dietetic tradition on materia medica, the individual monographs by means of which *Chinese Dietetics* presents information on specific food items are clearly modeled on TCM materia medica. Each food is thus described as possessing a distinctive temperature or *qi* (warm, hot, cold, cool, or neutral), flavor (*wei*), affinity to work on one or more of the organ systems of Chinese medicine (*gui jing*), and specific functions and indications. Notwithstanding similarities to traditional materia medica, *Chinese Dietetics* is a distinctly modern TCM text. It defines the functions and indications of foods in relation to the well-known syndromes or patterns (*zheng*) that constitute the core of contemporary TCM practice, and the authors frequently cite evidence from nutritional science to validate their knowledge claims.

For instance, pears are defined as being cool or cold, sweet and slightly sour in taste, to enter the lungs and stomach, to cool heat, generate fluids, moisten dryness and transform phlegm. They are indicated for treating damage to the fluids caused by heat, lung and large intestine heat patterns, and phlegm heat or wind heat in the heart; and they are contraindicated in cases of deficiency cold of the spleen and stomach. Pears are said to be cooling if eaten raw, and yin tonifying if cooked. Pears are also said to include a variety of organic acids, sugars, minerals, and vitamins. Finally, a number of prescriptions for the therapeutic use of pears are provided that include both foods and medicinals.[40]

Following the monographs of individual foods, the second part of *Chinese Dietetics* addresses itself to therapeutics by outlining the dietetic treatment of specific organ and substance dysfunctions as understood by contemporary TCM. For instance, following a brief synopsis of the physiological functions and characteristics of the lungs (*fei*), foods for the treatment of four specific lung patterns are discussed in the same manner that a TCM textbook on internal medicine might do for compound formulas (*fufang*). Chinese medicine dietetics is thereby constituted as a subspecialty of the wider field of TCM in the same manner that dietetics rooted in nutritional science constitutes a subdiscipline of the wider field of biomedicine.

Conclusion

I argued in the introduction that the writings of Fei Boxiong, as much as those of Manfred Porkert and his students, need to be understood as efforts to reconstitute Chinese medicine and dietetics in moments of perceived crisis.

Fei Boxiong believed the unity and foundational principles of Chinese medicine to be threatened by a wider dissolution of culture that most visibly expressed itself in the horrors of the Taiping Rebellion. His remedy was to seek out the true sources of effective action beyond any apparent surface diversity. To this end he advocated a process of self-cultivation that aimed to discover through reading, practice, and self-reflection the quintessential principles underpinning all of Chinese medicine. He argued that this process would lead spontaneously to an emphasis on harmonization and moderation in medical practice as much as in the wider cultivation of

life. Terse and to the point, Fei Boxiong's texts employed apparently simply concepts whose many possible layers of reference exemplified on the level of literary composition the very same principles he demanded physicians master in clinical practice. Readily accessible to an audience of nineteenth-century literati, interpreting these texts requires significant exegetical effort from contemporary readers.

Here I am struck, again and again, by the deep convergences between the writings of Fei Boxiong and those of François Jullien, a contemporary French sinologist who has been engaged for some time in his own project of distilling the essence of Chinese culture for a modern Western audience.[41] There are differences, of course, but the emphasis placed by both authors on concepts such as blandness (*dan*), propensity (*shi*), and the vitalization of life (*yangsheng*) as lying at the very heart of this culture is remarkable. These three terms, therefore, conveniently sum up the value Fei accords to foods in daily life as much as in medical practice. In this view, foods or medicines, just like people, are not intrinsically good or bad, but they do possess more or less potential to be worked with. The bland and everyday is accorded the highest value because its nature is closest to the undifferentiated source of all life. Ultimately, though, it is human agency that, by working with the propensity of things, shapes whether a medicine or food vitalizes or destroys life. In as much as such agency is shaped by the civilizing forces of culture, foods and medicines, too, are thereby brought within the purview of the distinctive civilizing practices that Fei Boxiong speaks from and to.

For Porkert and his students, on the other hand, the essence of Chinese medicine and dietetics lies in its very difference to the cultures and practices of the West, specifically reductionist science and medicine. Defining these values also requires a quintessentialization—although one that in its emphasis on cultural difference and in its location of effects in the stable essence of things reveals itself to be distinctively modern.

Chinese Dietetics thus values traditional Chinese medicine and dietetics above all else for its distinctive knowledge of the "energetic" nature of foods and medicines. To that end, the authors equate the Chinese term *qi* with the Western concept of "vital force" (*Lebenskraft*) that they describe as underpinning all energetic functions within the human organism. Chinese medicine and dietetics are characterized as focusing on "regulative and functional aspects" in contradistinction to biomedicine's concern for structure and mechanical causation.[42] Foods and medicines possess "*qi* force"

(*Qi-Kraft*) that can be used therapeutically. This force exists independently of human agency, not unlike the proteins, sugars, minerals, and vitamins of which foods and medicines are structurally composed. Chinese dietetics thus can work in tandem with biomedicine, even if its vision is depicted as ultimately more complete.

All of these are standard terms and concepts in the vocabulary of contemporary alternative health care in the West, which has deep roots in the holistic and vitalist philosophies of the late nineteenth and early twentieth centuries. Critical of hegemonic reductionist science, these philosophies nevertheless share with it distinctly modern perceptions about the nature of life as well as the goal of ultimate control over it. Neither holism nor vitalism is therefore antiscience. On the contrary, their proponents frequently imagine them as better ways of doing science but also as spiritually superior modes of engaging with the world.[43]

Chinese medicine is commonly constituted today in precisely this manner. Its own value and that of the things with which it works—including foods—have attained a stable form. Fei Boxiong might wonder why so little and yet so much appears to have changed between what he was writing against and what goes under the label of Chinese medicine and dietetics today.

Notes

This chapter developed out of a long-term research project into the Menghe current (*Menghe xuepai*) in Chinese medicine on which I embarked in 1999 with the support of a Wellcome Trust postdoctoral research fellowship (Award 056302/Z/98). I was able to conduct the research for this chapter as a Wellcome Trust Senior Investigator in the Medical Humanities (Award 097918/Z/11/Z) within a larger project entitled *Styles of Knowing and Ways of Practice in East Asian Medicine, 1100 to the Present*. I am grateful to the participants of the two workshops organized by Prof. Angela Leung at the Hong Kong Institute for the Humanities and Social Sciences in 2014 and 2015 for their critical feedback on earlier drafts. I owe a special debt to Prof. Leung herself for encouraging me to develop the ideas presented here and for guiding me in the development of my argument. I am thankful to Dr. Ute Engelhardt for her comments and suggestions.

1. These reflections by The Unofficial Historian of the Orchid Hall now constitute the foreword to the *Materia Medica of Appraised Foods* by Fei Boxiong 2006, 218. Throughout this chapter I refer to the edition of this text contained in *Menghe sijia yij* (Collected medical writings from four Menghe families), edited by Zhu Xionghua et al. This text consists of three parts that are not distinguished by any title. Apparently, these three parts, whose original names were *Materia Medica of Appraised Foods*

(Shijian bencao), Recipes of Drinks and Foods from the Materia Medica (Bencao yinshipu), and *Nutritional Therapeutics (Shiliang liaofa),* were compiled into a single text in 1936 by Xu Xiangren, the son-in-law of one of Fei Boxiong's grandsons.

2. Guo Wei, Guo Yangzhi, and Du Juan 2011, 661–662.

3. For an initial analysis of this process, see Scheid 2016.

4. For a detailed biography of Fei Boxiong, Menghe medicine, and its influence on Chinese medicine in late imperial and modern China, see Guo Wei, Guo Yangzhi, and Du Juan 2011. All of these works are included in the semiofficial *Anthology of the Medicine of Four Menghe Families* (*Menghe sijia yiji*), a compilation that also contains the *Materia Medica of Appraised Foods.* See Zhu Xionghua et al. 2006.

5. Zhao Erxun 1976, *juan* 502, p. 13883.

6. I analyze the development and attributes of Fei Boxiong's medical style in detail in Guo Wei, Guo Yangzhi, and Du Juan 2011, 153–72. For a Fei family perspective, see Xu Xiangren 1933.

7. The most important of these are *Refined Medicine Remembered* (*Yichun shengyi*) and *Treatise on Medical Formulas* (*Yifang lun*).

8. The original title of the book was simply "Refined Medicine" (*Yi chun*). However, the printing blocks were destroyed during the Taiping's occupation of Menghe in 1860 before the book had been printed. Fei Boxiong later published an abbreviated text under the title "Refined Medicine Remembered" (*Yichun shengyi*), a title that might be more literally translated as "Leftover Meanings from Refined Medicine."

9. For a discussion of these problematics in late imperial Chinese medicine, see Hanson 1998 and 2011.

10. Elman 2001.

11 For a detailed account of this emergence, see Hanson 2011.

12. Lu Jinsui and Lu Chengyi 1928, 3b.

13 Fei Boxiong's *Refined Medicine Remembered* is clearly modelled on Yu Chang's *Precepts for Physicians* (*Yimen falü*) from 1658. He also made extensive annotations to Cheng Guopeng's Awakening of the Mind in Medicine (*Yixue xinwu*) for use by his students.

14. Simonis 2010.

15. de Vries 2012.

16. Hanson 1998.

17 For an overview of the composition, indications, and clinical history of the licorice, wheat, and jujube decoction, see Scheid et al. 2009, 471–473.

18 Guo Aichun 1989, 955–956. My translation follows Unschuld (1986, 206) rather than Unschuld, Tessenow, and Zheng (2011, 2:353–354).

19. Unschuld 1973, 18–20.

20. Fei Boxiong 2006, 6.

21. Guo Aichun,1989, 955–956.

22. Unschuld 1986, 206.

23. Ibid., 205–228.

24. The *National Union Catalogue of Chinese Medical Books* (*Quanguo zhongyi tushu lianhe mulu*) lists three different texts under this title; Xue Qinglu, ed., *Quanguo zhongyi tushu lianhe mulu (National union catalogue of chinese medical books)* (Beijing: Zhongguo guji chubanshe, 1991), 196–198. The first is a Ming dynasty text by Ning Yuan first published in 1592. A text by the name of *Appraised Foods* (*Shi jian*) attributed to Ning Yuan is also cited three times by Li Shizhen in the section on foods in his

Bencao gangmu. The second is a Qing dynasty text by Chai Yi dated 1740. And the third is the Fei family version dated 1883.

25. *Materia Medica of Appraised Foods* was later included in a booklet published in 1938 by Fei Zibin (1890–1981), a scholar turned physician practicing in Shanghai and Hong Kong. Based on its first sentence, I translate this booklet as *The Use of Food for Nourishing Vitality in the Fei Family in Three Volumes* (*Feishi yi yang san zhong*). These texts were used in editing the *Materia Medica of Appraised Foods* that was included in the first edition of *Collection of Medical Texts from Four Menghe Families* published in 1985 by the Wujian County Medicine and Pharmacology Institute under the editorship of Zhang Yuankai. It was reprinted in the revised edition of 2006 (Zhu Xionghua et al. 2006) that is today considered the authoritative edition to which I refer throughout the present chapter. An online version is available at http://ctext.org.

26. Jia Ming 1985. See also the discussion by Mote 1977, 227–234.

27. Fei Boxiong 2006, 227.

28. Ibid., 225.

29. Ibid., 227, 228, 229, 225, 230.

30. Ibid., 225.

31. Ibid., 230.

32. Fei Boxiong 1863 [2006], 6.

33. Mao Zedong's famous maxim "Chinese medicine is a treasure house. We must vigorously explore it and elevate it" was delivered in a speech on October 11, 1958, to celebrate the success of the program of having doctors of Western medicine study Chinese medicine. For a detailed account, see Taylor 2004a, 118–123.

34. "Youyou Tu—Facts," Nobelprize.org, accessed December 9, 2015, http://www.nobelprize.org.

35. A more precise term for this type of distillation would perhaps be "mining." Porkert 1982, 569, for instance, refers to this practice when he remarks that in modern China the treasure house has been turned into a "quarry."

36. Ge Hong (340 CE) in *Emergency Recipes in One's Sleeve* (*Zhou houbei jifang*), chapter 3.16, cited in Hsu 2015, 82.

37. Lei 2014, 221.

38. The editors of the *Golden Mirror* create the impression of a unitary tradition by pasting comments by different authors on a given subject next to each other without providing context, thereby hiding the often viscerally felt differences of opinion that actually separated them.

39. The eleventh edition of the *International Classification of Disease* produced by the World Health Organisation, currently at beta draft stage, contains a section for TCM conditions; available at http://apps.who.int.

40. Engelhardt and Hempen 1997, 187.

41 This vision is worked out in a series of books that include Jullien 1997; Jullien and Hawkes 2000; Jullien 2004a; Jullien, 2004b; Jullien 2007.

42. Engelhardt and Hempen 1997, 2.

43. Scheid 2016.

12 | Good Food, Bad Bodies

Lactose Intolerance and the Rise of Milk Culture in China

Hilary A. Smith

In 2006, on a visit to an industrial dairy in Chongqing, China's then-premier Wen Jiabao declared, "I have a dream that every Chinese person—and children foremost—will be able to drink a *jin* [about five hundred milliliters] of milk every day."[1] Considering that in the United States, average milk consumption is many times higher than in China and still is only about two hundred milliliters a day, this does indeed seem like a distant dream for China. But it shows the extent to which fresh milk has come to be seen as an essential food there, and milk consumption an index of a healthy national diet. The Chinese "food pagoda," first produced in 2007 to illustrate the dietary recommendations of the government's Chinese Nutrition Society, accords fresh milk a prominent position (see figure 12.1). The accompanying recommendations, updated in 2016, suggest that a Chinese adult should consume three hundred grams of dairy per day, not quite fulfilling Wen's dream but an aspirational amount nonetheless.[2]

Whether because of official encouragement or for other reasons, Chinese consumers have rapidly increased their intake of fresh milk. Domestic consumption grew more than threefold in the first decade of the twenty-first century, fueling a dairy industry boom in China and expressions of concern outside of China at the way burgeoning demand was changing the global market.[3] Even a milk-contamination scandal that dominated national and international headlines in 2008 did not appreciably dim Chinese enthusiasm for the stuff.[4] In short, milk has become a good food, par excellence, in China today. By contrast, modern scholars examining foodways in



Figure 12.1 The Chinese Food Pagoda, 2016. The left side of the pagoda's second-highest tier represents dairy products. Used with permission from Chinese Nutrition Society, *2016 Dietary Guideline for Chinese* (Zhongguo jumin shanshi zhinan 2016) (Beijing: People's Medical Publishing House, 2016).

the past have suggested that milk was peripheral to or absent from the Chinese diet for most of history. Anthropologist Frederick J. Simoons, who divided the globe into "milking" and "nonmilking" cultures, saw the Chinese as an example of a nonmilking people; likewise, Andrea Wiley writes about China as a historically "lactophobic" society in which milk was the object of revulsion.[5] Some have presented the relative scarcity of milk in traditional Chinese diets as a puzzle: "Why did the Chinese fail to incorporate milk and milk products into their food system?" asked H. T. Huang in 2002.[6] Others have supplied answers to this puzzle by pointing to cultural or physiological factors that worked against dairy's assimilation in China. E. N. Anderson and Marja L. Anderson, for example, have suggested

that the association of dairy with koumiss-drinking Mongols or yak butter-eating Tibetans—peoples the Han Chinese considered less civilized than themselves—made it less palatable for late-imperial Chinese.[7] In addition to cultural prejudices, they note, there was a physiological obstacle to the acceptance of fresh milk: for much of the Chinese population, drinking milk induces varying degrees of physical discomfort. Most Chinese bodies beyond infancy produce little to none of the enzyme required to process the sugars in milk, so drinking too much can cause gas, bloating, and diarrhea. Although this is the normal condition of most healthy Chinese adults—indeed, of most healthy adults around the globe—biomedical scientists think of it as a defect and label it "lactose intolerance."[8]

While it is true that milk products were never central to the Chinese diet, and certainly not a daily necessity as they were for China's nomadic neighbors, the distinction between historical milkers and nonmilkers, lactophiles and lactophobes, is overdrawn. The Chinese did, in fact, milk livestock and consume dairy before modern times. As early as the Former Han Dynasty (207 BC–9 AD) the imperial household employed an official who collected mare's milk for "mare's-milk wine."[9] The sixth-century AD agricultural text *Qimin yaoshu* includes careful instructions for milking cows and goats or sheep, and for producing with their milk a fermented beverage called *luo*.[10] It might be more accurate, then, to describe traditional China as a "less-milking" society. Similarly, the descriptor "lactophobe" does not adequately represent a culture that, as Françoise Sabban has shown, demonstrated a quite sophisticated knowledge of milk and its properties, producing a range of dairy foods from fermented milk to butter to cheeselike treats.[11] Although descriptions in classical texts are not always clear enough to give a good sense of what exactly these foods were, some (*su*) resembled butter, others (*tihu*) clarified butter, still others milk curds (*rufu*) or a kind of buttermilk or liquid yogurt (*luo*).[12] Chinese medical texts, too, feature diverse milks used in diverse ways, without any hint of aversion to the substance.

This chapter suggests that in twentieth-century China, uneven political power combined with universalizing scientific culture to give milk a new moral meaning. In traditional Chinese medical and dietetic literature, dairy had been, for the most part, a morally neutral substance. Medical and dietetic texts presented it as a food well suited to some bodies under some conditions—northerners, for example, or convalescents. In the modern paradigm, milk became a universal good, and many thought

increasing the whole population's consumption of dairy would make people taller, stronger, more active, and innovative.[13] Drinking milk, and fostering milk drinking, therefore became duties of good citizens charged with contributing their strength and growth to the nation, and of government officials such as Wen Jiabao responsible for nurturing and protecting the people's health. In the process, bodies unable to easily process milk, the majority across East Asia, came to be seen as "intolerant" of a valuable foodstuff and therefore unable to take advantage of the nutritional benefits it offers. Making fresh milk into a universally good food meant making Chinese bodies into bad bodies.

Although a number of histories of milk have appeared in recent years, chronicling fresh milk's rise and entrenchment in Western societies and economies, almost all of these histories have been confined to a Euro-American perspective.[14] When they mention lactose intolerance, it is as a kind of aside, a shorthand explanation for why milk did not matter as much in most other parts of the world.[15] At the same time, archaeologists and paleoanthropologists have grown very interested in lactose *tolerance,* a genetic trait that spread through a few small human populations six thousand to eight thousand years ago.[16] Their studies focus on identifying the origins of lactose tolerance and explaining its spread. My approach differs from either of these existing bodies of scholarship. I am interested in how the concept of lactose intolerance was constructed, and how its construction has both reflected and reinforced Western-derived dietary norms. The case of China, where nutritionists have come to see lactose intolerance as a problem as they have promoted higher levels of milk consumption, illustrates this dynamic well.

Milk in Traditional Chinese Cuisine, Medicine, and Dietetics

Let us first examine attitudes toward milk expressed in Chinese texts before the twentieth century. Medical and dietetic sources show that Chinese intellectuals perceived milk as a useful substance for particular kinds of people in particular kinds of circumstances, and did not universally abhor dairy, as some accounts have implied. However, they also did not value milk as a universally good food for everyone. And for the most part, they seem to have ascribed little moral significance to milk.

Scholars have documented diverse uses of milk in Chinese cuisine.[17] But they have paid far less attention to milk's medical uses, even though Chinese people were as likely to encounter dairy in a therapeutic form as in a form meant primarily for delectation. Medical writers did not present dairy foods as a daily necessity or something that most people could consume in large amounts. Instead, they wrote about dairy as appropriate for certain kinds of people, and for certain stages of life. The *Yellow Emperor's Inner Canon* (*Huangdi neijing*), compiled around the first century BC, suggests that people from different regions are constitutionally suited to the consumption of different foods. Milk, in this schema, is for people from the north, probably meaning the frontier region around the Ordos Loop of the Yellow River and what is today Mongolia:

> The North,
> this is the region where heaven and earth secure and store.
>
> Its land lies at a high elevation,
> [its people] live in earthen mounds.
>
> Wind, cold, and piercing frost [dominate].
> Its people find joy in living in the wilderness and in consuming milk.[18]

Later doctors elaborated on the idea that bodies bore distinctive characteristics of their geographical origins, and that the foods appropriate for a northerner would sicken a southerner and vice versa. In his eighth-century *Materia Medica for Dietary Therapy* (*Shiliao bencao*), for example, Meng Shen writes of seaweed that while "many southerners eat this" with no ill effect, problems have arisen because "they have transmitted [this habit] to northerners. When northerners eat it, it doubly generates the various diseases, and is not suitable for them."[19] Likewise, milk did not suit southern bodies. As Marta Hanson has shown, this view of northern and southern constitutions as fundamentally different persisted and flourished well into the nineteenth century.[20]

Physicians perceived milk as having cooling properties, making it useful for illnesses that were caused by heat or were hot in nature (*xing*).[21] Seventh-century drug formulas recommend consuming pills made with milk to counteract the effects of drinking wine, understood as warming, and eating other foods thought to be heat-producing, such as wheat noodles.[22] Milk was also frequently included in suggested treatments for *xiaoke,* a disorder caused by depletion and excess internal heat and

characterized by thirst, hunger, frequent urination, and weight loss.[23] Other formulas incorporate milk for conditions as diverse as chills and fever, infection by ghost *qi,* vomiting in children, and ulcers on the back.[24]

Some formulas, notably, indicate that milk was also considered a kind of laxative or purgative; they state that inducing diarrhea is the sign of successful treatment with some milk-based decoctions.[25] This seems to have been a common perception, historically, among populations with high rates of lactose intolerance, in whom milk consumption is indeed likely to produce loose stools. Older women in Malaysia and Indonesia recount using milk in this way,[26] and in Ayurvedic medicine in South Asia milk was thought to facilitate digestion, "even being used as an enema or purgative."[27] In southern Europe, too, where rates of lactose intolerance are higher than in the north, a Renaissance scholar wrote of milk that it served to "loosen the bowels."[28]

Importantly, in both its culinary and medical uses, milk was processed: heated, dried, or fermented. As a beverage or food it became koumiss, cheese, or yogurt. In drug formulas, most commonly, it was boiled to produce an herbal and mineral decoction that was then drunk. In some prescriptions it was used to help bind drug ingredients into pill form, or recommended as a way to wash down a dose of pills. Even in the latter case, however, milk was not meant to be drunk cold: almost every mention of the stuff specifies that it is to be boiled (*zhu*) or sautéed (*jian*), and the same formulas that recommend milk to disperse heat also proscribe drinking cold liquids.[29] Processing milk in such ways reduces its lactose content, making it more easily digestible.

Milk in pre-modern China does not seem to have possessed any strong or consistent moral meaning. In medical and culinary texts, dairy was morally neutral, neither inherently good nor inherently bad, unlike in India, where cow's milk was considered pure and purifying, reflecting the sanctity of the animal in Hindu traditions.[30] In Chinese Buddhism, milk could be freighted with moral meaning, but there its significance was ambiguous: drinking cow's milk could be considered stealing from the calf (therefore, immoral), but using cow's milk in Buddhist ritual was a merit-earning activity (morally good).[31] In other words, the value of milk in premodern China was highly context dependent; it was appropriate for people from some regions and for those with particular health problems, but not universally health-promoting or universally virtuous. This reflected an "eat what you are" approach to diet: if you were a northerner, a

xiaoke sufferer, or a septuagenarian, dairy was for you, though not in the form of fresh milk. If not, it was unlikely to prove beneficial.

From "Eat What You Are" to "You Are What You Eat": Milk and Dietary Determinism in Modern Asia

In the twentieth century, new Western ideas about diet and nation took root in China and began to compete with and transform preexisting ideas and practices. These ideas prominently featured what the historian Rachel Laudan has called "dietary determinism." In contrast to the "eat what you are" perspective described above, dietary determinism fostered the idea that you are what you eat. Eating like the elite, many thought, would confer on the eater the qualities that had made the elite so successful. By extension, a national diet that reproduced what people ate in the world's most powerful countries could strengthen a comparatively weak state. Thus, the "power cuisine" of Western Europe and America, full of wheat, meat, and dairy, spread from the elite to ordinary people, and from Western powers to the rest of the world.[32] When it came to milk, dietary determinists in the 1920s rhapsodized, "The races which have subsisted on liberal milk diets are the ones who have made history and who have contributed the most to the advancement of civilization."[33] Others concurred, "The people who have achieved, who have become large, strong, vigorous people, who have reduced their infant mortality, who have the best trades in the world, who have an appreciation for art, literature and music, who are progressive in science and every activity of the human intellect are the people who have used liberal amounts of milk and its products."[34]

Such arguments rested on two kinds of parochialism. One was ignorance of the fact that dairying was prominent in some places outside of Europe and America, among people whom Western intellectuals did not consider "large, strong, and vigorous." Praise of milk's transformative power "conveniently ignored the long-standing dairy traditions of India," for example, as Wiley has noted.[35] The other was unawareness of how recently the habit of drinking fresh milk had developed in the West. E. Melanie DuPuis writes that in the United States, most dairy had been consumed in the form of cheese or butter as late as the mid-nineteenth century. When Americans had imbibed dairy in liquid form it had usually

been buttermilk, a byproduct of butter making. But the changes that urbanization wrought in women's lives precipitated a decline in breast-feeding and fueled demand for a year-round supply of fresh cow's milk as nourishment for infants. At the same time, religious belief that milk was God's provision for human sustenance combined with scientific efforts to itemize and measure nutrients to give fresh milk the reputation of being a "perfect" or "complete" food. By the early twentieth century, Westerners had come to think of fresh milk as essential to a healthy diet. Moreover, they thought of it—erroneously—as an ancient staple of Judeo-Christian civilization, prominent since Biblical times.[36]

Even if the claim that drinking fresh milk fueled national supremacy rested on false premises, however, it had tremendous influence in late nineteenth- and early twentieth-century Japan and China. Susan Glosser has shown how Chinese dairy boosters promoted milk consumption as a way to increase China's fitness in the Darwinian struggle for national survival.[37] In Meiji and Taishō Japan, as Izumi Nakayama highlights in this volume, eminent political and medical authorities—even the Meiji Emperor himself!—promoted cow's milk consumption as a way to strengthen the nation. This boosterism seems to have worked against the contemporaneous valorization of a mother's own breast milk; Nakayama notes that in practice, significant percentages of well-to-do Japanese women fed their babies cow's milk anyway. Jia-Chen Fu's discussion of soy milk in this volume reveals how strong the milk imperative was in Republican China. Since China lacked the resources to produce a large supply of cow's milk, Chinese nutritionists promoted soy as a substitute, something that could take milk's essential place in the diet.

Underlying these Taishō and Republican attitudes was a belief that milk is good for all people. Modernizers in Japan and China did not perceive cow's milk as well suited to Westerners but inappropriate for themselves, as doctors educated in classical medicine might have done. Chinese nutritionists promoted soy milk not because they considered it better suited to *Chinese* bodies than cow's milk, but because it was cheaper and more accessible.

This fits the broader pattern of how Western standards defined healthy nutrition in modernizing Asia, a dynamic that Michael Shiyung Liu's contribution to this volume explores in detail for 1930s China. Influential organizations such as Shanghai's Lester Institute and the Peking Union Medical College promoted nutritional guidelines crafted by American

scientists and the League of Nations. While physiologists such as Li Ting'an adjusted Western standards in ways that they thought better fit the Chinese population, they did so by decreasing the amounts of various nutrients to account for the smaller Chinese body size, with each nutrient decreased in proportion to the others. When food substitutions were suggested, it was because of economic constraints; in poor, war-torn China, managing to eat all the things recommended in Western dietary guidelines was not possible. Western-trained scientists did not, in other words, think of particular kinds of foods as being unsuited to Chinese bodies. "Experiments throughout the world," proclaimed the Chinese agronomist Wen-yuh Swen and his American collaborator Leonard Maynard, "lead to the conviction that *any diet thus far devised* without milk will be improved by its inclusion."[38]

The Growth of Milk Consumption and Production in China

However compelling Chinese and Japanese elite may have found the prospect of strengthening the nation through milk, in the early twentieth century fostering widespread consumption in either country remained aspiration rather than reality.[39] But after World War II the habit of milk drinking began to spread to large numbers of people outside of the cultures in which dairying had been centrally important. As Deborah Valenze has chronicled, European and American dairy producers in the postwar decades were churning out milk, butter, and cheese in amounts that domestic markets could not possibly absorb: "'Milk lakes' and 'butter mountains' had become bywords in the European Economic Community in the early 1960s, not as visions of an ideal world but as signs of a significant, even alarming overproduction of dairy products."[40] Dairy producers also struggled to find markets for the byproducts of their industry, such as lactose. In the 1950s, lactose was being produced so abundantly in the United States, as a byproduct of cheese making, that dairy scientists were being urged to find new uses for it. Mass production of penicillin was absorbing some, as adding lactose to the feed of *Penicillium notatum* increased the yield of the drug. But the American dairy industry was by then producing some ten billion pounds of lactose-containing whey every year, and only about 7 percent of the lactose was being put to use.[41]

In response, new government nutrition programs purchased large amounts of milk and promoted its consumption by formerly non-dairy-eating populations, both domestically and abroad. As an example of domestic propagation, when the American government passed the National School Lunch Act of 1946, milk was the first item on the menu, and butter was included as well. A decade later Congress authorized seventy-five million dollars to be spent over three years "to increase the consumption of fluid milk by children," a program that continued to be renewed through the 1960s.[42] Internationally, the passage of Public Law 480 made the United States "the world's primary source of food aid" starting in 1954. The law was designed not only to provide humanitarian assistance and promote goodwill toward the United States in the context of the Cold War but also to provide an outlet for excess agricultural production, including dairy.[43]

The flood of milk into other parts of the globe affected Japan long before it did China. Japan, after all, was a major recipient of American food aid in the wake of World War II. This largesse, whether humanitarian or self-interested, altered Japanese eating habits and cuisine, as scholars have documented. The tons of wheat shipped from American farms prompted a boom in *ramen* and other wheat flour-based dishes, at the expense of more traditional fare.[44] And milk became for the first time the drink of Japanese schoolchildren, thanks to a daily lunch program launched by the US occupation government that included "bread, biscuits, and powdered milk."[45]

The politically isolated People's Republic of China (PRC) received no comparable influx. Dairy remained rare there. Racked by the turmoil of shifting policies in the early 1950s, the great famine in the late 1950s, and the Cultural Revolution in the 1960s and '70s, and exhorted by Mao Zedong to "take grain as the key link," Chinese farmers did not see raising dairy cows as a priority. One indicator of milk's scarcity in the early PRC is Chinese drug makers' search for a suitable fuel to use in making antibiotics. In the West, as mentioned, pharmaceutical companies used a small fraction of the dairy industry's surplus lactose to maximize their penicillin yield. In China, by contrast, lactose was neither abundant nor cheap. Chinese drug makers therefore looked for other substances more common in their country that might serve a similar function. A 1954 article in the *China Pharmaceutical Journal* by Shanghai public health officials observes that in their city one hundred tons of lactose had been used in the previous year to make drugs, and most of that had been imported from abroad. In

order to preserve the national treasury, therefore, the authors suggested that it was important to follow the example of the Soviets and find ways to use lactose sparingly in drug production—by substituting sugars from grain, for example.[46] Unlike Americans, Chinese were clearly not swimming in milk.

This began to change in the mid-1970s as political and economic priorities changed. In 1974 the journal *China Dairy Industry* began publication, featuring reports on the dairy industries of other countries as well as on efforts within China to increase production and consumption. In 1979, at the dawn of the reform-and-opening period that Deng Xiaoping's policies ushered in, *China Dairy Industry* could proudly report that China's farmers had produced "more than 46,000 tons" of dairy foods in the previous year, "the highest level since the founding of the PRC."[47] This may have been a lot by the standards of the early PRC, but it was still a very small industry compared to dairy giants such as the United States; in 1980 American farmers produced more than sixty-four million tons of milk.[48] As reform and opening proceeded, however, dairy production and consumption both rose quickly, accelerating most dramatically since 2000. By 2008 Chinese consumption of milk had grown 1700 percent compared with 1970, and Chinese milk production had grown five times larger than it had been only eight years before.[49]

The rise of milk culture was not explicitly underpinned by dietary determinism, which in its crudest form had receded by this time. One does not find prominent scientists and public health officials in 1980s China arguing, as did their counterparts in 1950s Japan, that wheat and dairy eaters are more innovative than rice eaters or that their own rice-eating people have "an approximately twenty percent weaker mind" than wheat-fed Westerners.[50] Nonetheless, Western standards still influenced Chinese dietary guidelines. When the Chinese Nutrition Society formulated its nutritional guidelines in the late 1990s, it hewed closely to those that the US Department of Agriculture had advanced in 1992. The food pagoda illustration produced to accompany these guidelines (see figure 12.1) bears an unmistakable resemblance to the USDA's food pyramid (figure 12.2).

Apart from the curved roofs on the pagoda, there is little to distinguish one set of guidelines from the other. Even the location of dairy products on the Chinese graphic is the same: second tier, left-hand side. Although the justification for including dairy has changed—it is said

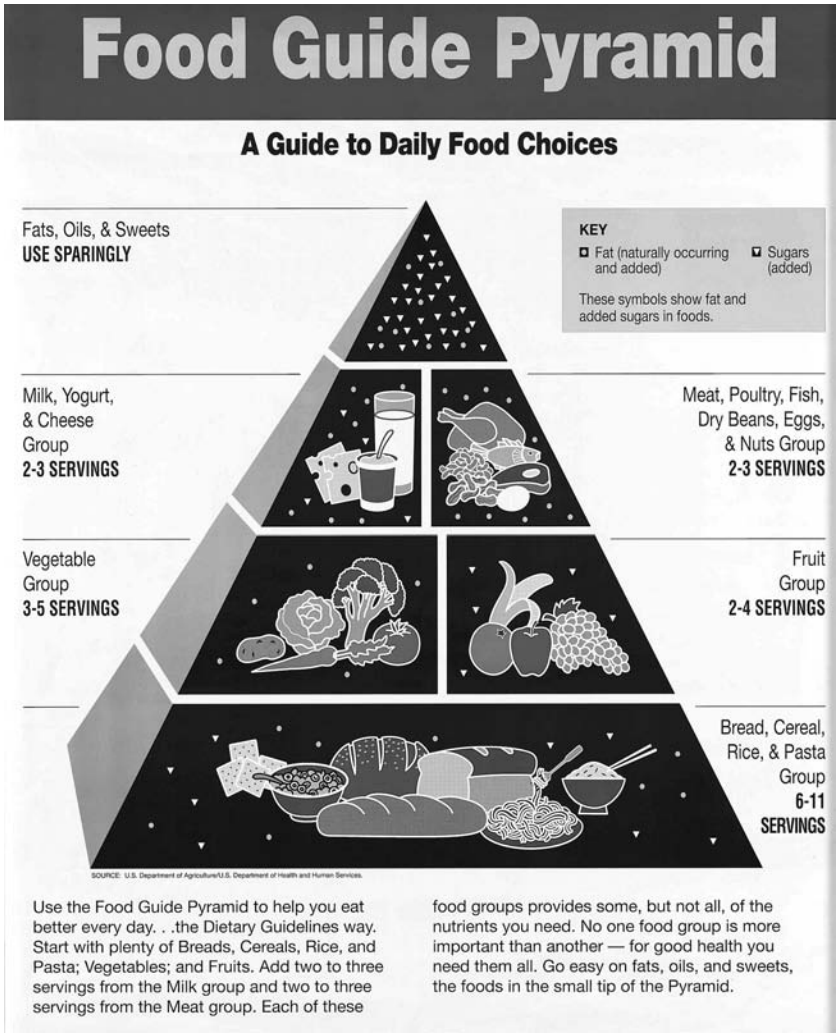


Figure 12.2 The Food Guide Pyramid of the United States Department of Agriculture, 1992. Dairy products are located on the left-hand side of the second-highest tier, just as in the later Chinese food pagoda. Courtesy of the U.S. Department of Agriculture.

to reduce the risk of chronic disease rather than to boost strength and initiative—the faithfulness of the imitation suggests that American dietary ideals have a normative influence similar to what they exercised in 1930s China.[51]

Making Bodies Bad: The Invention of Lactose Intolerance

A significant challenge to the assumption that drinking fresh milk is universally good was the increasingly apparent fact that it causes gastrointestinal distress in a large number of people. As growing numbers of people who had not regularly drunk fresh milk before—including African Americans, Asian Americans, Ugandans, Japanese, Thais, and other Southeast Asians—began to imbibe it thanks to new patterns of trade and humanitarian assistance, it started to become clear that their bodies' responses to it differed markedly from those of most Caucasians. Over the course of a decade or so, the concept of lactose intolerance began to take shape. It was the apotheosis of milk's new moral significance: if milk was a good food, fuel to make bigger, stronger, healthier citizens, then bodies that could not process it easily were bad bodies, "intolerant" of the very substance that stood to reinvigorate the nation.

It is tempting to characterize the phenomenon of lactose intolerance as a discovery. It is, of course, a biological reality. All healthy human babies produce an enzyme called lactase that breaks down lactose, the main sugar in any kind of milk, and makes it digestible. But after early childhood, three-quarters or more of the world's bodies cease producing lactase, or produce very little; consequently, many people cannot drink much milk without experiencing unpleasant symptoms such as bloating and diarrhea.[52] This is what, gradually, scientists discovered in the 1960s and 1970s. But the scientists who discovered this interesting variation in human biology, mostly of European descent and accustomed to thinking of Western European bodies as normative, framed it as a medical condition. Pathological designations accreted around the response of healthy adult bodies to fresh milk: *lactose intolerance, lactase deficiency, lactase insufficiency, hypolactasia*. That lactase production usually ceases after infancy was a discovery, in other words, but "lactose intolerance" as a medical problem was an invention.

The first studies to highlight racial difference in lactase levels appeared in the United States in 1965 and 1966. One of these was the report of Theodore Bayless and Norton Rosensweig, from Johns Hopkins University, in the *Journal of the American Medical Association*. They studied twenty white and twenty black inmates at a prison, all in good health. They tested for lactase deficiency by having the men ingest fifty grams of lactose and

then provide blood samples six times over the subsequent two hours, testing for a rise in glucose level that would indicate the presence of lactase. Bayless and Rosensweig also biopsied and assayed the men's jejuna, a part of the small intestine, to assess lactase levels directly. They concluded that most of the black inmates were lactase deficient.

Interestingly, the overwhelming majority of black inmates had themselves reported, before any of these invasive procedures were undertaken, that milk altered their digestion. The men did not phrase it as "milk intolerance," a medical condition. Rather, they saw the loose stools associated with milk consumption as reflecting a characteristic of the milk itself, viewing it as "a mild laxative": "many extolled [milk's] virtue as a producer of 'regularity.'"[53] In this, their perspective resembled those expressed in classical Chinese medicine and Ayurveda, where milk acted as a useful purgative.

For the white researchers, however, low lactase levels were "inborn errors of metabolism." They speculated that this defect might be inherited.[54] Bayless and Rosensweig's study sparked more research into racial differences in lactose digestion, and garnered attention in the popular press.[55] At first scientists sought to explain the evolutionary origins of lactose intolerance. Like many researchers after them, Bayless and Rosensweig assumed that intolerance was an aberration from the dominant state of humankind, speculating that it might be a "recessively inherited condition" that required "homozygosity for appearance of the trait." They proposed an explanation that is the inverse of what scientists now believe, hypothesizing that over many generations, Africans may have *become* lactose intolerant because they did not drink milk after weaning. In a milk-free environment, they reasoned, producing lactase would have wasted energy and resources, so when random mutations yielded lactase nonpersisters in Africa they would have had a slight competitive edge over those whose bodies labored to produce useless lactase.[56]

Scientists struggled to grasp that a trait unlike the one found in people of northern European descent could, in fact, be more typical. As research began to accumulate in the late 1960s indicating that not only African Americans but also Asian immigrants, Ugandans, and Thais and other Southeast Asians produced little or no lactase as adults, a fierce debate developed over whether this "abnormality" was genetic or acquired.[57] Some reasoned along the same lines as Bayless and Rosensweig that lactase deficient populations had mutated away from the original template over many

generations, while others suggested that whether individuals continued to produce lactase after weaning might, in fact, simply reflect whether they continued to consume milk. Conversely, this latter camp supposed, one could perhaps induce lactase production in deficient individuals by feeding them lactose—that is, perhaps it was possible to turn lactose-intolerant persons tolerant by exposing them to milk.[58] It was the geographer Frederick J. Simoons who, in 1970, first proposed that lactase nonpersistence might have been the original state, and lactase persistence the mutation. By looking at what was then known about the distribution of lactose intolerance in milk-producing and non-milk-producing societies, he concluded that lactase persistence had probably developed as a beneficial mutation in milking societies. As he observed, "It seems more promising to view the Western pattern, of high levels of intestinal lactase and of lactose tolerance throughout life, as the aberrant one which must be accounted for. This is because the Oriental pattern is like that of almost all land mammals . . . and the Western pattern is strikingly different."[59]

This viewpoint came gradually to be the scientific consensus. By 1981 the director of the National Institute of Child Health and Human Development at the US National Institutes of Health could write definitively in a volume on lactose digestion, "Lactose intolerance is a normal physiological condition, shared by every adult animal except for certain ethnic and racial groups in man, most of whom are located in the United States or in northern parts of Western Europe. It is lactose tolerance rather than lactose intolerance, as initially assumed, that is most significant. The ability to digest lactose is the abnormal state, while lactose intolerance is the usual, normal condition in the human adult world population."[60]

Consensus did not, however, change the way scientists and physicians framed lactase nonpersistence; they continued to write about it as a deficiency. Although the introduction quoted above acknowledges that "lactose tolerance . . . is most significant," most of the book it prefaces is devoted to chapters treating lactose *intolerance* as a problem, examining diagnosis and screening, clinical consequences in adults and children, and promoting the development of low-lactose dairy products so that those suffering from this deficit could still consume milk.

At the same time that clinicians, geneticists, geographers, anthropologists, and others were puzzling over the evolutionary origins of lactase nonpersistence, some grew concerned that lactase nonpersistence—characterized in a *Washington Post* op-ed as a problem of "dark-skinned

people"—threatened the effectiveness of food aid provided to poor populations, both domestically and internationally.[61] In their 1966 study, Bayless and Rosensweig had mentioned, almost as an aside, "Milk intolerance may also have some sociologic significance since some welfare programs provide powdered milk for impoverished recipients, many of whom are Negro and who might be expected, on the basis of this study, to have lactase deficiency."[62] By the early 1970s this concern had developed into a debate. Some argued that giving milk to a malnourished lactose-intolerant person would not improve his state of nourishment (because he would simply refuse to drink it) or worse, that it would exacerbate the problem by giving him diarrhea.[63] In malnourished children in the Third World, the extra loss of fluid could even be fatal.[64]

In retrospect, this moment seems like it might have opened an opportunity to reevaluate the ideas about a universally healthy diet that had emerged in the early twentieth century, and had been built on Euro-American cuisine and observations of Caucasian bodies. Could other sorts of diets—perhaps even diets without dairy—promote health and growth and vigor? In the event, however, milk was too entrenched—in the global economy and in the convictions of nutritionists and policymakers—for observations about racial variability to unseat it. The United Nations' Protein Advisory Group wrote in 1972, "Milk is considered a virtually complete food and in the developing areas of the world, where protein deficiency is widespread and protein-calorie malnutrition a serious childhood problem, the use of milk for child feeding programs is strongly advocated by all nutrition experts."[65] With backing from such international authorities, those arguing to retain milk as part of domestic and international assistance programs won the day. Milk powder has remained an important part of international food aid—more prominent when donor countries have agricultural surpluses to shed, less prominent when those surpluses dwindle[66]—to the present.

In China, as the idea that milk is a universally good food gained broader acceptance, the idea that lactase impersistence is a pathology accompanied it. The Chinese terms coined for the phenomenon were pejorative and negative, just like the English originals: *rutang bunai zheng,* "unable-to-bear-lactose syndrome," and *rutangmei quefa,* "lactase deficiency." They expressed, like the English originals, the conviction that Caucasian bodies were normal and that the far more numerous others were deviations from that norm. Initially, however, Chinese researchers

seem to have approached lactase impersistence as an index of racial identity and difference rather than as any kind of public health challenge. The first original Chinese article on lactase deficiency appeared in 1983.[67] By the mid-1980s, Chinese scientists were finding high rates of lactose intolerance among Han Chinese (80–85 percent in most studies) and comparing those rates with rates among ethnic minority groups such as Uyghurs.[68] Articles presenting lactose intolerance as a *problem* requiring a solution mostly appeared in dairy industry journals, not medical or nutritional literature.

Since the 1980s, however, as milk has become more prevalent in China, lactose intolerance has increasingly been presented as a problem not just for dairy producers but for public and individual health as well. Dairy industry representatives have allied themselves with experts in nutrition and preventive medicine, and articles on lactose intolerance have spread beyond industry journals to appear with greater frequency in medical literature. Increasingly, state resources have been devoted to developing low-lactose dairy products to help Chinese consumers overcome this perceived problem. In 2001, the Chinese Nutrition Society and the China Dairy Industry Association jointly organized a conference on lactase and low-lactose dairy products with DSM, a Dutch manufacturer of lactase. The conference brought together researchers from respected institutes such as the Chinese Academy of Preventive Medicine and provincial medical colleges. Their participation constituted a tacit endorsement of the idea—congenial to the dairy industry and DSM—that lactose intolerance is a problem requiring attention, and that adding lactase to dairy products (not, for example, consuming less dairy) is its best solution.[69] Even more recently, the dairy imperative in a lactose-intolerant population has reached what one might see as its logical culmination: on April 24, 2012, scientists at Inner Mongolia Agricultural University introduced to the world the first cow genetically engineered to produce low-lactose milk. Her name in Hanyu Pinyin is Lakesi, variously rendered in the English-language press "Lucks" or "Lakes," and the scientists who created her predicted that she would begin producing China-friendly milk within a few years, after birthing her first calf. "Her birth," a celebratory account proclaimed, "brings glad tidings to the lactose-intolerant consumers of the world."[70]

That differential lactase production is seen as a medical concern deserving such an investment of effort and resources even in a place like China, where lactase impersistence is typical, shows the extent to which

Western "power cuisine" of the late nineteenth century remains globally normative today. Official dietary guidelines have overshadowed older Chinese ways of thinking about dairy, as a food and medicine with properties that made it suitable for particular people under particular circumstances. In the place of those older ideas, public health campaigns have promoted the idea that fresh milk is a universally good food. Traditional China is thus presented as a nonmilking, lactophobic society that, with a few minor exceptions, was unwilling and unable to make use of this "most nearly perfect food."[71]

At the official level, the moralizing message that responsible citizens drink milk, and responsible officials promote it, remains strong. Milk's status as a morally good food continues to be reinforced by influential bureaucracies such as the United Nations, by patterns of trade and food aid, by the continuing growth of the Chinese dairy industry, and by scientific discourse that frames lactose intolerance as a protodisease.[72] The 2016 edition of *Dietary Guidelines for Chinese* highlights this. To the updated food pagoda pictured in figure 12.1 it has added a new illustration: the "balanced diet plate" shown in figure 12.3.

Like the pagoda, the plate's aesthetics invoke traditional Chinese culture; the four recommended food categories (grains, vegetables, fruits, and fish-meat-eggs-and-beans) assume the shape of a yin-yang symbol, and the utensils next to the plate are Chinese: a spoon and a pair of chopsticks. But the content of the diagram still reflects the perspective that nutritional recommendations developed primarily in the West over the course of the past century and a half are universally applicable. In particular, the diagram elevates dairy by giving it an independent place, represented as a cup full to the brim of fresh milk. Not only is dairy presented as essential—taking the place of water in the pagoda diagram—but it appears as liquid milk, not cheese or yogurt or any of the other lactose-reduced forms of dairy found in premodern East Asia.

Nevertheless, beneath the confident uniformity of official recommendations, older ways of thinking about milk persist. Chinese eaters, like those everywhere, rely on multiple sources of dietary advice, some of which contradict one another.[73] In some venues alternative narratives about milk are flourishing. A recent article in a popular Chinese health magazine, for example, titled "Drop These 'Western Habits,'" advises readers not to drink a glass of cold milk in the morning, because it is not suited to Chinese bodies—an argument that the authors of the *Yellow Emperor's Inner Canon*



Figure 12.3 2016 Balanced Diet Plate for Chinese. Used with permission from Chinese Nutrition Society, *2016 Dietary Guideline for Chinese* (Zhongguo jumin shanshi zhinan 2016) (Beijing: People's Medical Publishing House, 2016).

might have recognized.[74] Moreover, the normative power of last century's elite Western diet may be starting to erode. As rates of obesity have risen in rich Western countries, and China's political and economic power have grown, the proposition that eating like Americans or Europeans confers strength and health has lost credibility. It seems, then, there is room for alternative narratives about milk to grow or even to be revived, rehabilitating "bad" bodies as they reassess what constitutes a good food.

Notes

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2. "'Zhongguo jumin shanshi zhinan' 2016 shou cang ban! Hexin tuijian ji zhaiyao," Chinese Nutrition Society, accessed September 26, 2016, http://www.cnsoc.org.

3. Louisa Lim, "China's Growing Thirst for Milk Hits Global Market," NPR News, April 21, 2008, accessed November 25, 2015, http://www.npr.org. Andrea S. Wiley, "Milk for 'Growth': Global and Local Meanings of Milk Consumption in China, India, and the United States," *Food and Foodways* 19 (2011): 18–20.

4. Tania Branigan, "Chinese Figures Show Fivefold Rise in Babies Sick from Contaminated Milk," *Guardian,* December 2, 2008, accessed November 30, 2015, http://www.theguardian.com.

5. Frederick J. Simoons, "The Traditional Limits of Milking and Milk Use in Southern Asia," *Anthropos* 65, no. 3/4 (1970): 547–593, map 3; and Wiley, "Milk for 'Growth.'"

6. H. T. Huang, "Hypolactasia and the Chinese Diet," *Current Anthropology* 43, no. 5 (December 2002): 816. Frederick J. Simoons frames the topic in much the same way in *Food in China: A Cultural and Historical Inquiry* (Boca Raton, FL: CRC Press, 1991), 458.

7. E. N. Anderson, Jr., and Marja L. Anderson, "Modern China: South," in *Food in Chinese Culture: Anthropological and Historical Perspectives,* ed. K. C. Chang (New Haven, CT: Yale University Press, 1977): 341.

8. Ibid. See also Huang, "Hypolactasia and the Chinese Diet."

9. H. T. Huang, *Fermentations and Food Science*, part 5 of *Biology and Biological Technology*, vol. 6 of *Science and Civilisation in China* (Cambridge: Cambridge University Press, 2000), 248.

10. Jia Sixie, *Qimin yaoshu* (Taipei: Taiwan shangwu yinshuguan, 1968), 1:89.

11. Françoise Sabban, "Un savoir-faire oublié: Le travail du lait en Chine ancienne," *Zinbun: Memoirs of the Research Institute for Humanistic Studies, Kyoto University* 21 (1986): 31–65.

12. Huang, *Fermentations and Food Science*, 248–257.

13. See the chapter by Jia-Chen Fu in this volume.

14. For example, Deborah Valenze, *Milk: A Global and Local History* (New Haven, CT: Yale University Press, 2011); Peter Atkins, *Liquid Materialities: A History of Milk, Science, and the* Law (Surrey, UK: Ashgate, 2010); Anne Mendelson, *Milk: The Surprising Story of Milk through the Ages* (New York: Knopf, 2008); and E. Melanie DuPuis, *Nature's Perfect Food: How Milk Became America's Drink* (New York: New York University Press, 2002). Two prominent exceptions to the Euro-American focus are the work of Andrea Wiley and that of Françoise Sabban. Andrea S. Wiley, "The Globalization of Cow's Milk Production and Consumption: Biocultural Perspectives," *Ecology of Food and Nutrition* 46 (2007): 281–312; Wiley, "Milk for 'Growth'"; and Andrea S. Wiley, *Cultures of Milk: The Biology and Meaning of Dairy Products in the United States and India* (Cambridge, MA: Harvard University Press, 2014). Sabban, "Un savoir-faire oublié"; and Françoise Sabban, "The Taste for Milk in Modern China (1865–1937)," in *Food Consumption in Global Perspective: Essays in the Anthropology of Food in Honour of Jack Goody,* ed. Jakob A. Klein and Anne Murcott (Basingstoke, UK: Palgrave Macmillan, 2014), 182–208.

15. Valenze, *Milk,* 3; Atkins, *Liquid Materialities,* xv; and DuPuis, *Nature's Perfect Food,* 28.

16. Y. Itan, A. Powell, M. A. Beaumont, J. Burger, M. G. Thomas, "The Origin of Lactase Persistence in Europe," *Public Library of Science Computational Biology* 5, no. 8 (2009): e1000491; and Andrew Curry, "Archaeology: The Milk Revolution," *Nature* 500, no. 7460 (July 31, 2013): 20–22.

17. Edward H. Schafer, "T'ang," in *Food in Chinese Culture: Anthropological and Historical Perspectives,* ed. K. C. Chang (New Haven, CT: Yale University Press, 1977), 105–107; Sabban, "Un savoir-faire oublié"; and Huang, *Fermentations and Food Science*, 248–257.

18. *Huang Di nei jing su wen: An Annotated Translation of Huang Di's Inner Classic—Basic Questions,* vol. 1, trans. Paul U. Unschuld and Hermann Tessenow (Berkeley: University of California Press, 2011), 214–215.

19. Meng Shen, *Shiliao bencao,* ed. Xie Haizhou et al. (Beijing: Renmin weisheng chubanshe, 1984), 10.

20. Marta Hanson, "Robust Northerners and Delicate Southerners: The Nineteenth-Century Invention of a Southern Medical Tradition," *Positions* 6, no. 3 (Winter 1998): 515–550.

21. These examples come from the *Wai tai mi yao fang,* a large formulary compiled in the mid-eighth century from other texts then circulating. Wang Tao, *Wai tai mi yao fang,* ed. Gao Wenzhu (Beijing: Huaxia chubanshe, 1993), 127.

22. Ibid., 198, 752.

23. Ibid., 196, 198, 200, 202–204, 206, 231.

24. Ibid., 203 (chills and fever); 243 (ghost qi); 718 (vomiting children); 757 (ulcers on the back).

25. Ibid., 752.

26. Personal communication, Geoffrey Pakiam, July 2015.

27. Wiley, *Cultures of Milk,* 101.

28. Ibid.,104.

29. Its appearance in a formula for a "cold decoction" (*yinzi*) implies but does not explicitly state that the milk is to be used cold in that case. Wang Tao, *Wai tai mi yao,* 530.

30. Wiley, *Cultures of Milk,* 60.

31. Simoons, *Food in* China, 456, 458.

32. Rachel Laudan, *Cuisine and Empire: Cooking in World History* (Berkeley: University of California Press, 2013): 255–257.

33. Samuel J. Crumbine and James A. Tobey, *The Most Nearly Perfect Food: The Story of Milk,* as quoted in Wiley, *Cultures of Milk*, 109.

34. National Dairy Council pamphlet, as quoted in DuPuis, *Nature's Perfect Food,* 117.

35. Wiley, *Cultures of Milk,* 109.

36. DuPuis, *Nature's Perfect Food,* chaps. 2 and 3.

37. Susan Glosser, "Milk for Health, Milk for Profit: Shanghai's Chinese Dairy Industry under Japanese Occupation," in *Inventing Nanjing Road: Commercial Culture in Shanghai, 1900–1945,* ed. Sherman Cochran (Ithaca, NY: Cornell University Press, 1999), 207–233.

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39. Sabban calls milk in Republican China "a consumption habit for a happy few," and shows how this expensive beverage was restricted to the elite; Sabban, "Taste for Milk," 186–187.

40. Valenze, *Milk,* 274.

41. M. E. Hull, "Commercial Production of Lactose," *Journal of Dairy Science* 41, no. 2 (February 1, 1958): 330–331.

42. Milk Program Act of 1958, Pub. L. No. 85–478, 68 Stat. 849.

43. Sophia Murphy and Kathy McAfee. *U.S. Food Aid: Time to Get It Right* (Minneapolis, MN: Institute for Agriculture and Trade Policy, 2005), 3–4.

44. George Solt, *The Untold History of Ramen: How a Political Crisis in Japan Spawned a Global Food Craze* (Berkeley: University of California Press, 2014), 61.

45. Ibid., 61. See also Vaclav Smil and Kazuhiko Kobayashi, *Japan's Dietary Transition and Its Impacts* (Cambridge, MA: MIT Press, 2012), 56.

46. Zhang Weishen et al., "Qingmeijun zhu 133 chansheng Qingmeisu de yanjiu" (A study of 133 strains of *penicillium* that produce penicillin)," part 4, *Acta Microbiologica Sinica* 4, no. 1 (May, 1956): 127–136.

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48. Don P. Blayney, "The Changing Landscape of U.S. Milk Production," *United States Department of Agriculture Statistical Bulletin No. 978* (June 2002): 2, http://www.ers.usda.gov.

49. Wiley, "Milk for 'Growth,'" 14.

50. Solt, *Untold History of Ramen,* 78–79.

51. "Zhongguo jumin shanshi zhinan!" See also the chapter by Michael Shiyung Liu in this volume.

52. Curry, "Archaeology," 20–22; Huang, "Hypolactasia and the Chinese Diet"; Marlene Zuk, *Paleofantasy: What Evolution Really Tells Us about Sex, Diet, and How We Live* (New York: Norton, 2013), chap. 4; and K. David Patterson, "Lactose Intolerance," in *The Cambridge World History of Food,* ed. Kenneth Kiple, 1057–1062 (Cambridge: Cambridge University Press, 2000).

53. Theodore M. Bayless and Norton S. Rosensweig, "A Racial Difference in Incidence of Lactase Deficiency: A Survey of Milk Intolerance and Lactase Deficiency in Healthy Adult Males," *Journal of the American Medical Association* 197, no. 12 (September 19, 1966): 139.

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56. Bayless and Rosensweig, "Racial Difference," 140–141.

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61. Lederberg, "Hereditary Tummy-Ache?" E7.

62. Bayless and Rosensweig, "Racial Difference," 142.

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70. "Zhongguo peiyu de shoulie zhuanjiyin di rutang nainiu you wang 2014 nian chan nai" (The first genetically engineered low-lactose dairy cow, Chinese bred, may produce milk in 2014), *Hubei Journal of Animal and Veterinary Sciences* 5 (2013): 56.

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74. Yang Guang, "Gai diao zhe xie 'Yang xi guan!'" (Drop these "Western habits!"), *Ren ren jian kang* 12 (2014): 34–35.

Glossary

anko	餡子
anpan	あんパン
aruheitō	有平糖
azuki	小豆
Bencao congxin	本草從新
Bencao gangmu	本草綱目
Bencao gangmu shiyi	本草綱目拾遺
Bencao jing	本草經
Bencao jizhu	本草集注
Bencao yinshipu	本草飲食譜
Benjing fengyuan	本經逢原
bo	薄
bōro	ボーロ
bottarayaki	ぼったら焼き
bunsik	분식
Byōkasuchi	病家須知
Cai Yuanpei	蔡元培
cha	茶
Chai Yi	柴裔
Chajing	茶經
char kway teow	炒粿條

chashoku	茶食
Cheelo (Qilu)	齊魯
Cheng Guopeng	程國彭
Chengdu	成都
chichitsuke	乳つけ
Chongqing	重慶
chun	醇
dagashi	駄菓子
dagashiya	駄菓子屋
daifukumochi	大福もち
dan	淡
dango	団子
dao	道
dihuang	地黄
Ding Fubao	丁福保
dokubutsu	毒物
doujiang	豆漿
du	毒
eisei monaka	衛生最中
Erya	爾雅
fanhui	飯會
fei	肺
Fei Boxiong	費伯雄
fu ling	茯苓
Fu Sinian	傅斯年
fu zi	附子
fufang	複方
fugu	復古
fuguo qiangbing	富國強兵
Fukuzawa Yukichi	福沢諭吉
gajeonghak	가정학
gan	甘
gan mai dazao tang	甘麥大棗湯
Gao Lian	高濂

gentan	減反
gohan	ご飯
Gongdelin	功德林
gu	蠱
gui jing	歸經
Guiyang	貴陽
Guizhou	貴州
Hani Motoko	羽仁もと子
Hanxue	漢學
he	和
He Baoshan	賀寶善
Hirai Ikutarō	平井毓太郎
Hirano Jūsei	平野重誠
honsik	혼식
Hou Xiangchuan	侯祥川
Hu Haochuan	胡浩川
Hu Shih	胡適
Hu Yuzhi	胡愈之
huan	緩
Huangdi neijing	黃帝內經
Imakagami	今鏡
Ishinpō	医心方
Ishizuka Sagen	石塚左玄
jajangmyeon	자장면
japgok	잡곡
Jia Ming	賈銘
jian	煎
jin	斤
Jin Baoshan	金寶善
jing jie	荊芥
jingji keneng	經濟可能
Jingui yaolüe	金桂要略
ju hua	菊花
junyi	軍醫

Kaibara Ekken	貝原益軒
kaiseki	懐石
Kaiyuan wenzi yinyi	開元文字音義
kalguksu	칼국수
kanpō	漢方
kanshoku	間食
kaozheng	考證
kashi	菓子
kashizei	菓子税
kasutera	カステラ
kateigaku	家庭学
Katō Hiroyuki	加藤弘之
Katsuki Gyūzan	香月牛山
Kikki	吉記
Kondō Yoshiki	近藤芳樹
Kunming	昆明
Kuomintang	國民黨
Kurosu Ken	黒須謙
laksa	叻沙
Lanting Yishi	蘭庭逸史
Li Shizeng	李石曾
Li Shizhen	李時珍
Li Tingan	李廷安
Lianda	聯大
Lin Ke Sheng (Robert Kho-seng Lim)	林可勝
lu gen	蘆根
Lu Yu	陸羽
Lujun yingyang yanjiusuo	陸軍營養研究所
luo	酪
Luo Dengyi	羅登義
manjū	饅頭/まんじゅう
Matsumoto Ryōjun	松本良順
meizi	梅子
Meng Shen	孟詵

Menghe	孟河
Menghe xuepai	孟河學派
mianjin	麵筋
Micaili	密采里
Mi-le-er	米勒耳
Mishima Michiyoshi	三島道良
mochi	餅
monaka	最中
monja-yaki	もんじゃ焼き
Nakai Riken	中井履軒
namban-gashi	南蛮菓子
nedari	強請り / ねだり
nihonjinron	日本人論
nōhon shugi	農本主義
Nyūgyūin	乳牛院
ochazuke	お茶漬物
omoyu	重湯
onigiri	お握り
oyagaku	親学
oyatsu	おやつ
Park Chung Hee	박정희
pingdan	平淡
qi	氣
Qimin yaoshu	齊民要術
qing	清
Qing bai lei chao	清稗類鈔
qinghao	青蒿
qingqing zhi pin	輕清之品
Qiuchi biji	仇池筆記
Rangaku	蘭学
rennyū	練乳
Rou shi lun	肉食論
Ruan Qiyu	阮其煜
rufu	乳腐

rutang bunai zheng	乳糖不耐症
rutangmei quefa	乳糖酶缺乏
seishoku	正食
Sen no Rikyū	千利休
Shanghan lun	傷寒論
Shen Zhonggui	沈仲圭
Shennong benjing	神農本經
Shenshi Weisheng Hui	慎食衛生會
shi	勢
Shijian bencao	食鑒本草
shikō wo mitasu	嗜好を満たす
Shiliao bencao	食療本草
Shi-Lie-min	施列民
shincha	新茶
Shindō Genkei	進藤玄敬
shiruko	汁粉
Shiyang liaofa	食養療法
shoku-pan	食パン
shushi	蔬食
so	酥
soba-manjū	蕎麦饅頭
soju	소주
su	酥
su	素
Su Shi	蘇軾
sujebi	수제비
Sun Baoqi	孫寶琦
sushi	素食
taidoku	胎毒
tamago kake gohan	卵かけご飯
Taniguchi Heizaburō	谷口平三郎
Tenyakuryō	典薬寮
tezhong binggan	特種餅乾
tianran shenghuo	天然生活

tihu	醍醐
Tongil	통일
Tsuboi Jirō	坪井次郎
tteok	떡
tu	荼
tuming	荼茗
wagashi	和菓子
Wan Xin	萬昕
wei	味
wenbing	溫病
Wu Juenong	吳覺農
Wu Liande	伍連德
Wu Tingfang	伍廷芳
wu tou	烏頭
Wu Xian (Wu Hsien)	吳憲
wu xing	五行
Wu Yiluo	吳儀洛
wulong	烏龍
Wuyi	武夷
xi	細
xiaoke	消渴
xing	性
Xu Xiangren	徐相人
xuepai	學派
Yakubutsu gaku: Nikkon kibun	薬物学：日講紀聞
yangbing diyi, yingyang diyi	養兵第一, 營養第一
yangsheng	養生
Yanshou xinfa	延壽新法
Yichun shengyi	醫醇剩義
yin	陰
yingyang su	營養素
Yinshi xuzhi	飲食須知
yōgashi	洋菓子
yōjō	養生

Yōjōdan	養生談
Yōjōkun	養生訓
yōkan	羊羹
Yu Chang	喻昌
Yushin	유신
zasshoku	雜食
zhajiangmian	炸醬麵
Zhang Lu	張璐
Zhang Xicen	章錫琛
Zhao Xuemin	趙學敏
zheng	証
Zheng Ji	鄭集
zhezhong	折中
Zhongguo chaye fuxing jihua	中國茶業復興計劃
Zhongguo de dadou wenti	中國的大豆問題
Zhongguo jundui zhi yingyang yanjiu	中國軍隊之營養研究
Zhongguo minzhong zuidi yingyang xuyao	中國民眾最低營養需要
Zhongguo Yingyang Xuehui	中國營養學會
Zhongguoren de tizhi	中國人的體質
Zhongxi yixuebao	中西醫學報
Zhongyang junyi xuexiao	中央軍醫學校
Zhouli	周禮
zhu	煮
Zhu Kezhen	竺可禎
Zhu Shenzhi (Ernest Tso)	祝慎之
zongzi	粽子
Zun sheng ba jian	遵生八牋

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