"Praying for the Cure": Transformations of Japanese Medical Traditions and the Question of Modernity

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Abstract

"Science" and "magic" are not simply two opposing thought processes which have a straightforward relationship, first, on a presumed axis of progress—*from magic to science*, and second, within the context of a presumed cultural divide—*Western "science" vs. Eastern "tradition"*. The aim of this paper is to examine in historical perspective the introduction of so-called "Western medicine" in Japan and examine the idea that through this introduction "traditional" Chinese knowledge was simply superseded by "modern" Western science. By looking into the intellectual currents within the field of medicine, specifically in eighteenth-century Japan, and comparing them to those in the West, the article tries to challenge the narrative of "modernity" as a sort of uniquely Western achievement defined by "disenchantment", "rationalism" and "science".

Keywords: science, medicine, West, China, Japan, tradition, modernity, epidemic, disease, epistemology

»Molitev za zdravilo«: preobrazbe japonskih medicinskih tradicij in vprašanje modernosti

Izvleček

»Znanost« in »magija« nista zgolj dva nasprotujoča si miselna procesa v neposrednem odnosu, najprej na domnevni osi napredka *od magije k znanosti*, nato pa v okviru domnevne kulturne ločnice – *zahodna »znanost« proti vzhodni »tradiciji«*. Namen tega prispevka je v zgodovinski perspektivi proučiti vpeljavo tako imenovane »zahodne medicine« na Japonskem in razmisliti o tem, ali je s to uvedbo »moderna« zahodna znanost res preprosto izpodrinila »tradicionalno« kitajsko znanje. S proučevanjem intelektualnih tokov na področju medicine, zlasti na Japonskem v 18. stoletju, in z njihovo primerjavo s tistimi na Zahodu skuša članek spodbijati pripoved o »modernosti« kot nekakšnem edinstvenem zahodnem dosežku, ki ga opredeljujejo »razočaranje«, »racionalizem« in »znanost«.

Ključne besede: znanost, medicina, Zahod, Kitajska, Japonska, tradicija, sodobnost, epidemija, bolezen, epistemologija

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Introduction

Habe nun, ach! Philosophie,
Juristerei und Medizin,
Und leider auch Theologie
Durchaus studiert, mit heißem Bemühn.
Da steh ich nun, ich armer Tor!
Und bin so klug als wie zuvor;

Johann Wolfgang Goethe: *Faust*, lines 354–59

There are several major factors that can disrupt the course of human societies. They can be broadly categorised as *geological*, *biological* and *political*. Within the first category we can count natural disasters, such as earthquakes, volcanos, landslides, floods, tsunamis, etc., the second would include contagious diseases, while the major factor within the third category would be wars. It is difficult to assess how a specific factor shapes the course of history, however William McNeill (1998) proposed in his ground-breaking book *Plagues and Peoples*, originally published in 1977, that the international movement of disease accounts for much social and political upheaval and ultimately change throughout human history. A similar hypothesis, namely that infectious diseases are as important to understanding societal development as economic crises, wars, revolutions, and demographic change, is proposed by Frank M. Snowden (2019) in his recent book *Epidemics and Society*, where he considers the impact of epidemics not only on the lives of individual men and women, but also on religion, the arts, the rise of modern medicine and public health, and intellectual history (Snowden 2019, 2).

Often these factors would accompany each other or overlap. Though often exaggerated or misconstrued in general discourse, natural disasters can have serious health consequences, generally associated with population displacement, specifically the proximity of safe water and functioning latrines, the nutritional status of the displaced population or the level of immunity to vaccine-preventable diseases (Watson, Gayer and Connolly 2007, 1). Wars and epidemics likewise like to join hands, be it the Plague of Athens which devastated the famous city-state during the Peloponnesian War in 430 BC or the 1918 influenza pandemic, known as the Spanish Flu, which killed millions in the wake of the First World War.

However, in the decades following the Second World War, a feeling prevailed that humanity was finally coming out on top of contagious diseases, and pathogenic

calamities such as the ravaging of the Black Death, the epidemics of smallpox, cholera, tuberculosis, or even Spanish Flu, were becoming a thing of the past, only to be read about in history books and certainly not to be experienced in today's world.[1] In the preface to the 1998 edition of his book, McNeill reflects on the 1970s' overly optimistic atmosphere in medical science, with the prevailing belief that infectious diseases had lost their power to affect human lives significantly, supposing that scientific medicine had finally won decisive victory over germs (McNeill 1998, 9). Indeed, newly discovered antibiotics, advanced public health measures and other developments in medicine made infections easy to prevent and cure. After all, in late 1970s the World Health Organization succeeded in eliminating smallpox from the face of the Earth (ibid.). However, as McNeill (ibid., 10) argues, this was the high point of the WHO's remarkably successful campaign to reduce human death from infections and a germ "counteroffensive" soon followed, most notably with the HIV virus causing AIDS:

> Development of resistant strains of malaria, TB, and other familiar infections was a second, and in many ways more important, sign that twentieth-century victories over the parasitic microorganisms that feed upon our bodies was only an unusually dramatic and drastic disturbance of the age-old balance between human hosts and disease organisms. As the century comes to its close, it seems sure that infections are coming back, regaining some of their old importance for human life … (McNeill 1998, 1)

These words could hardly sound more prophetic in the third year of the COVID-19 pandemic that is still transforming the world. While medical science produced effective vaccines which prevent contracting or at least falling victim to a more severe case of COVID-19, the general attitude of the public across the globe

1 Actually, it was in the mid-70s that Ivan Illich published his book *Limits to Medicine* which opens with the famous sentence: "The medical establishment has become a major threat to health" (Illich 1995), arguing that the "threat which current medicine represents to the health of populations is analogous to the threat which the volume and intensity of traffic represent to mobility, the threat which education and the media represent to learning, and the threat which urbanization represents to competence in homemaking" (ibid., 7). Following Illich's critique, we could also argue that this period was a turning point where medical industry or medicalized health surpassed other diseases as the obstacle to a healthy life, the idea that Illich called *iatrogenics*. Illich claims that "The study of the evolution of disease patterns provides evidence that during the last century doctors have affected epidemics no more profoundly than did priests during earlier times. Epidemics came and went, imprecated by both but touched by neither. They are not modified any more decisively by the rituals performed in medical clinics than by those customary at religious shrines" (ibid., 15). We will not explore the theory of *iatrogenics* in this paper, but in arguing the relationship between "magic" and "science" in the field of medicine, we will be following the line of argument in his critique on the "magic" of "medical science".

is nevertheless ambivalent, with a not insignificant percentage of people having a strong distrust of scientific explanations or perhaps subscribing to various conspiracy theories relating to the pandemic and the measures taken to prevent it.

It might seem bewildering how at the start of the third decade of the twenty-first century people still hold deeply unscientific or "magic" beliefs about medicine, and particularly vaccines. However, "science" and "magic" are not simply two opposing thought processes which have a straightforward relationship, first, on a presumed axis of progress—*from magic to science*, and second, within the context of a presumed cultural divide—*Western "science" vs. Eastern "tradition"*. The aim of this paper is to present a historical perspective on the introduction of so-called "Western medicine" in Japan and examine the idea that through this introduction "traditional" Chinese knowledge was simply superseded by "modern" Western science.

The current situation allows us to observe daily the actual complexity of beliefs and attitudes toward the epidemic, vaccines, masks, drugs, homeopathic treatments, etc., and these observations offer useful insights into similar historical contexts. For example, current attitudes toward COVID-19 vaccination cannot be reduced to a simple opposition between pro- and anti-vaccine movements. The public embraces a whole spectrum of fears and beliefs that guide their convictions regarding vaccination. Japan has often been described as a relatively sceptical nation, but in a recent paper exploring today's vaccine hesitancy in Japan, Andrew Gordon and Michael R. Reich (2021) argue that the apparent low public confidence in vaccines is based on a complex history of vaccine acceptance and resistance, and that while today the recommended routine vaccines are generally accepted, the cases of vaccine failures and improper official reactions to these have nevertheless generated significant public and official hesitancy toward some new vaccines in the country.

Belief in "Science"

Vaccination is indeed an unusual technology within the field of medicine. Vaccines are not a cure. One does not take them when sick hoping to get better. Instead, vaccines are administered only to healthy people with the idea that those who get the shot will not get sick if they are infected at some later date. And this is indeed strange as a concept of medication, requiring a certain leap of faith because it expects us to believe that we have not fallen ill precisely because we took the vaccine. And because we can never know this, we must believe it.

However, we should not conflate this belief with the often professed "belief in science". We should not gloss over the fact that "science" is a complex notion which warrants some caution when invoking its powers. There is a significant difference between understanding the *scientific method* as the best possible tool for the inquiry into the nature of things, and an approach to "science" as an object of adoration. Nevertheless, we regularly come across narratives professing "belief in science", which supposedly legitimizes the believer's stance and provides them with the argument to crack down on "nonbelievers". But science is not something to be believed, it is something to be practiced no matter how often scientific conclusions turn out to be false. If we profess our *belief* in science, then nonbelievers can (and they inevitably do) simply point to any of those instances when scientists got things wrong (or were deliberately misleading, which, naturally, happens as well), and they can justifiably ridicule our blind *faith*. Scientists use the *scientific method* and operate with *theories*, while believers conflate them for *truths*. Aside from the question of whether the results of the scientific investigation are "true" or not, science itself cannot be "true". Science is instead a historical mode of thought and inquiry which can provide us with better and more accurate explanations of the world we live in.

By saying that science is *historical* rather than *true*, I want to emphasize that the application of a specific method of inquiry, which we call the *scientific method*, has its own history with its origins and historical development, which is, as we have long been aware, not a continuous progress toward universal truth, but rather a process of paradigm shifts or *scientific revolutions*. Our aim in this paper is not to follow the development of the scientific method across cultures, but to look more specifically into the nature of medical practice and how attitudes toward medicine correlate with the so-called shift to *modernity*.

Have We Ever Been Modern?

We still tend to explain the world history in terms of "progress", "enlightenment", "modernity", etc. by which we try to give meanings to various phenomena regarding human institutions and structures in various societies. The ideological background of the project of modernization requires the modernizing societies to be cut off from their premodern traditions. On the other hand, for the new modernized regime to be maintained, it is necessary to establish the legitimacy of the new order by relying on continuing cultural traditions[2] (Shiraishi 2018,

2 In this sense, as Andrew Horvat (2018, 190) notes, "traditional values—whether historically accurate or constructed—continue to function as social norms, the benchmarks by which correct behaviour is judged."

52). Contemporary sensibilities have discouraged us from the self-assured designations of the anthropology of the past, such as "primitive societies" or "societies without history", and we have adopted a more relativistic approach to human diversity talking rather about "multiculturalism" or "cultural diversity", but we have yet to rethink the attitudes or perceptions that see the world we live in as detached from our past by that *rational* enlightenment, that triumph of reason, which has made us *modern*.

Modernity is essentially understood as a specific view of human societies and their relation to nature, most commonly associated with the notion of "the disenchantment of the world", i.e. the historical process by which the natural world and all the areas of human experience become experienced and understood as less mysterious (Jenkins 2000, 12). However, the narrative of a straightforward trajectory that took Western people from believing in spirits, myth and magic to modern, rational individuals has been thoroughly challenged. Josephson-Storm (2017) traces the genealogy of this narrative which supposes that the defining feature of "modernity" is the departure of the supernatural, the narrative which equates modernity with the rise of instrumental reason and alienation of humanity from nature.

This narrative is connected to another narrative that describes the history of the modern scientific paradigm in terms of the rise of mathematical physics and the construction of a model of a "clockwork universe" that no longer needed spirits or a deity to drive the motor of the cosmos (Josephson-Storm 2017, 5). In his pursuit of this myth of Euro-American modernity and its putative relationship to rationality and nature, Josephson-Storm (2017, 5–6) explores the presence of magic in the very instances when disenchantment was itself being theorized.

Some, like Jenkins (2000, 28–29), have argued that (re)enchantment is no less diagnostic of modernity than disenchantment, although it might be even more productive to try and rethink the idea of *modernity* itself. We should ask ourselves, whether modernity provided specific, *modern*, i.e., radically different responses in comparison to premodern ones to the above-mentioned factors of social disruption? Does it construct geological, biological, or political factors in some particularly modern and disenchanted way, compared to premodern societies?

The short answer would be no. "Modernity" has not eliminated warfare. It can be argued that modern rationalism along with technological advancement has indeed "rationalized" killing, be it the form of mass murders in German death camps organized in a manner of Fordist industrial production, or the "rationalization" of

"collateral damage" by the application of the contemporary drone technology.[3] However, no matter how technology allowed for the "rationalization" of killing, be it providing solutions to how to kill either more or fewer people efficiently, the fact remains that survival is the self-interest of any individual and that people killing each other is, at least for those actually facing the possibility of dying, a highly irrational endeavour usually fuelled by emotions such as hatred or fear.

In case of geological factors, no matter how people explained causes of natural disasters, they attempted to protect themselves by both "rational" and "irrational" solutions—they were building dams, canals, and earthquake-proof buildings while at the same time they were praying to the gods of nature. As for human health, even though we tend to think that "premodern" societies relied more on magic than science, a look into the history of medicine reveals that people of all times and cultures were investing quite a lot of effort into finding cures to supplement their prayers and magic.

As natural disasters continue to afflict mankind, we try to alleviate their impact by means of technology, although people still resort to prayer. As we have seen, we make use of the advances in technology to improve our lives, while at the same time we use them to wage even bloodier and more lethal wars. Both aspects are characteristics of modernity. In the field of disease, we continue to do what humans have been doing for millennia—we try to keep up with the pathogens by developing our medical science with the aim of preventing or curing a disease. However, as Ivan Illich (1995) warned us in his critique of the modern medical system, we could be falling victim to another "enchantment"—the magic of the medical profession.

At the beginning of this paper, I listed infectious diseases in the category of *biological* factors, but we must be clear from the start that diseases, while being of course

3 Writing about drone warfare, Gusterson (2019, S78) describes these "rationalizations" allowing drone operators to defer a strike until there are no or at least few civilians nearby, and then consult with military lawyers who can decide whether the likely civilian casualties would be deemed "proportionate", and therefore acceptable, within the frame of the laws of war. Drone operators can also use special software to calculate the probable damage radius (and thus the likelihood of civilian "collateral damage") depending on the ordnance selected and the placement of the missile. The proponents of the so-called "technomorality" of drone warfare argue that it represents a kinder, gentler way of fighting (ibid., S77). George W. Bush's CIA director, Michael Hayden, quoted in Gusterson (ibid.), described drone warfare as "the most targeted and effective application of firepower in the history of armed conflict," and called the drone "an exquisite weapon when you want to be both effective and moral". In a similar vein, Harold Koh, legal advisor to the State Department during the Obama administration, said, "because drone technology is highly precise, if properly controlled, it could be more lawful and more consistent with human rights and humanitarian law than the alternatives" (ibid.). The "rationalization" of killing can thus cut both ways: in the case of German death camps, it was perceived as the absolute lowest point for human beings *as moral beings*, while in the case of drone killings it is presented as the epitome of morality within warfare.

a pathological reality, are at the same time also a social construction (Hays 2009, 1). Apart from its material manifestation, a disease is also constructed through various convictions about it. What concerns us here, therefore, is not the biomedical "reality" of disease or scientific "rationality" in the history of medical practice, but rather the idea of rationality itself as manifested in the attitudes, responses and beliefs regarding disease and medicine. Through historical survey, I want to focus on the question of how societies across the cultural spectrum construct their convictions and attitudes toward disease or medicine in a broader sense. I want to question the idea of a fundamental divide between the "modern", rational and scientific attitude based on the European Enlightenment and non- or premodern "magical" approaches. To better explore this, I next present a brief overview of the history of medical tradition in Europe and Japan.

European Medical Tradition

According to Hays (2009, 9), the ancient Greek attitudes and practices show that the border between "supernatural" and "natural" approaches could be very unclear, as it had been for the earlier Egyptians:

> The best-known healing tradition of the early Greeks was associated with the cult of Asclepios, a mythic hero who emerged as a lesser god in the Greek pantheon of the sixth century B.C.E. The sick would repair to the temple of the god and perform ritual sacrifices and bathings, followed by a crucial "incubation sleep" in which dreams and visions appeared to the sufferer. Those dreams either healed directly, or gave directions (interpreted by the priests of the god) for an appropriate therapeutic regimen, which might include bathing, rest, the administration of drugs, and attention to diet. (Hays 2009, 9–10)

This cult of Asclepios, according to Hays (2009, 10), gained a wide following in subsequent centuries, extending into the Greco-Roman world as the principal pagan religious response to disease. Then there was a Hippocratic tradition which had some of its roots in Asclepian temple medicine, but it also included both older traditions of surgery and pharmacology and some newer conceptions of nature.

By assigning explanations for the phenomena of health and disease to nature and reason, the Hippocratic physicians rejected superstition, divination, and magic. They reasoned that if the world was uniform and natural, all phenomena were equally part of nature and if the gods were responsible for any particular phenomenon, they were equally responsible for all phenomena (Magner 2005, 95). This

rejection of magic therefore cannot be interpreted as an intellectual shift from magic to reason, but rather a shift in understanding nature as both natural and divine. While Hippocrates ridiculed the deceptions practiced in the name of religious healing, he was not opposed to prayer and piety (ibid.).

Based on the Hippocratic tradition of understanding anatomy and medicine through the theory of *humorism*, the most famous physician and philosopher of European antiquity, Galen, later influenced both medieval Christians and early Muslims (Hays 2009, 11). Indeed, no other figure in the history of medicine has influenced the concepts of anatomy, physiology, therapeutics, and philosophy as much as Galen, the physician known as the Medical Pope of the Middle Ages and the mentor of Renaissance anatomists and physiologists (Magner 2005, 121). His explanation of human physiology was "systemic" in the sense that if disease was a product of the imbalance of the *humors* carried by the different systems, the physician should restore the balance (Hays 2009, 13). Galen, like many other physicians in the Roman Empire, was Greek, because the Romans among whom Galen lived generally did not "practice medicine" as a profession. They rather explained disease as the product of the many gods who superintended each household and indeed each part of the body, and heads of families performed the appropriate rites and sacrifices to preserve family health (ibid.).

Christianity brought a radically different conception of healing which grew out of a religious view which, as Hays (2009, 14–15) argues, sharply contrasted with the ideas of the Greco-Roman culture. It combined the ideas of Judaism, which were shared with Mesopotamian cultures in relating disease to errant behaviour that angers the gods, while the other emphasis was the association of disease and the "unclean". On the other hand, in contrast to the Jews, the Christians lived in the expectation of the imminent end of the world:

> Perhaps because things of the body therefore seemed transiently insignificant, perhaps because pagan learning was not to be trusted, some Christians scorned the orthodox healing routines of the Greeks and Romans. Perhaps the traditions of Hippocrates, or Asclepios, were too closely associated with other gods, while the elaborate purification rituals of the Jews represented the "law" that Jesus's teaching had superseded. The Christians lived in a world entirely dominated by their god's immanence; disease and health, if they had any importance at all, acquired such importance as manifestations of God's power and will. (Hays 2009, 15)

After the fall of the Roman Empire, the early centuries of the European "Middle Ages" were primarily based on agricultural production with little long-distance

trade, and this profoundly rural society lacked the urban concentrations that encouraged airborne diseases, so major epidemics were largely absent in Europe until the plague returned in the fourteenth century (ibid., 19). With the later growth of urban centres and long-distance trade, however, medieval cities became intensely crowded and very dirty. The lack of sanitation on one hand meant high levels of intestinal infections, such as diarrhoea, dysentery, and typhoid fever, while on the other hand bigger crowds meant tuberculosis, influenza, smallpox, measles, and of course the plague (ibid., 36).

European medical doctrine regarding contagious diseases in those times was based on the concept of *miasma* (pollution) or as it was also known—*mala aria* or "bad air". However, though the *miasma* remained a predominant theory regarding the cause of disease up until the late nineteenth century, when the understanding of pathogens as the causes for infectious diseases replaced *miasma* theory with germ theory, the so-called "Black Death" epidemic of the fourteenth century had already prompted some reactions that seemed based on the idea of contagion (ibid., 54). So, as Hays (2009, 54–55) argues, by the fifteenth century the members of health boards gradually began acting on more clearly contagionist assumptions which led to more direct interference in the lives of both individuals and groups. As such, occasions that brought crowds together, like school classes, church services and religious processions became suspect, and were thus objects of regulation.

These public health control measures that were articulated and practiced in fifteenth-century Italian city-states included municipal quarantine and isolation of the victims, and thus with a health commission's declaration that the plague was present in a city, a series of administrative and political measures were implemented whose goals were quarantine and isolation (ibid., 55).

The complexity of responses to disease from antiquity well into "modern" times certainly belies the idea that the development of a "scientific" thought process followed an imaginary trajectory from "magic" to "reason". Any change should rather be understood as shifts in mode of thought, sort of epistemological shifts, that seldom completely abandon existing epistemological foundations. *Scientific revolutions* do not occur that often, and Galen remained the ultimate authority on anatomical and physiological questions at least until the sixteenth century (Magner 2005, 124):

> Never satisfied with purely anatomical description, Galen constantly struggled to find ways of proceeding from structure to function, from pure anatomy to experimental physiology. It is rare to encounter a problem in

> what might be called classical physiology that Galen did not attempt to cope with either by experiment or speculation. By extending medical research from anatomy to physiology, Galen established the foundations of a program that would transform the Hippocratic *art* of medicine into the *science* of medicine. (Magner 2005, 125)

As Hays (2009, 78) writes, indistinct boundaries divided science, religion, magic, empirical healing, and folk custom, regardless of the role of God's will as the major explanation of the origin of disease. According to Magner (2005, 197), the Renaissance era may have ultimately transformed European culture in a profound and permanent way that led to the modern world, but it was also a period in which superstition, mysticism, intolerance, and epidemics flourished.

The development of international trade ushered in an era of exploration which, in its turn, set in motion the technical innovations that were based on scientific research. The so-called age of *scientific revolutions* brought challenges on many fields of ancient knowledge and medicine was by no means an exception:

> Important philosophers in the early seventeenth century, especially Descartes and Francis Bacon (1564–1626), came to the radical conclusion that all past knowledge was uncertain and that the human mind must begin anew on different epistemological principles, whether those of deductive reason and mathematics (as Descartes urged) or of the inductive collection of data (as Bacon argued). In either case authority—perhaps Aristotle's, perhaps Galen's, perhaps Christianity's—must be set aside. (Hays 2009, 99)

This raises the question of just how far did the Enlightenment affect the practice of healing? Hays (2009) makes an interesting argument showing how deeply scientific conceptions were related to broader social circumstances and attitudes. Despite all the advances in "scientific thinking", this scientific thought was bound to the wider conceptions of the *rerum natura*, and both medical ideas and practices followed from this. For example, regarding the cause of epidemic disease, there remained a basic disagreement between the *miasma* or "bad air" doctrine and the idea of contagion (ibid., 109).

In fact, by the seventeenth century many states had evolved elaborate public health mechanisms to deal with the plague, but during the eighteenth century that machinery, and the thinking behind it, largely fell from favour, and the reason for this, according to Hays (2009, 110–11), is that in part the *miasma* theory might have

been more sympathetically regarded by those Enlightenment thinkers who emphasized the rights of individuals against the coercive powers of the state. Undoubtedly much liberal Enlightenment opinion resisted the infringements on liberty that came with a contagionist doctrine, such as quarantines and health passes, which they considered as classic instruments of a heavy state hand. Just as those who today oppose the mask mandate in the name of personal liberty and argue "rationally" that masks cannot stop the virus, so the eighteenth-century liberals argued "rationally" that disease is spread not through contagion but through "bad air".

On the other hand, contagionist arguments may also have withered because the plague ceased to be a major menace in the eighteenth century, which called into question the utility of the machinery designed to divert it. Seventeenth-century thinkers increasingly relied on mechanical and iatrochemical explanations for the causes of new diseases such as curvy, syphilis, rickets, and above all the "fevers", such as typhus, malaria yellow fever, and influenza. However, older explanations, such as divine wrath, plutonic exhalations, unfortunate astrological conjunctions, etc. persisted (ibid., 109–10).

Medicine in Japan

From the fifth century on the inhabitants of the Japanese archipelago gradually adopted more advanced medical techniques from the Asian mainland through Korea, eventually called *kanpō igaku*[4] 漢方医学 or "Chinese medicine", which came to form the main current of Japanese medical practice until well into the second half of the nineteenth century (Otori 1964, 20). In fact, practices understood under the term of *kanpō* persist in Japan to this day, and according to data from the Japan Kampo Medicines Manufacturers Association (JKMA) during the period from August 5, 2008 to September 12, 2008, 83.5% of 684 medical doctors stated that they were using *kanpō* (Motoo, Seki and Tsutani 2011, 85). *Kanpō* is still greatly integrated into modern medicine in Japan by being a part of the medical education given at all 80 medical schools in the country since 2005 (ibid., 86).

Of course, "Chinese medicine" is just as heterogenous, diverse and complicated as the previously described "European tradition". The earliest written evidence extant today on the theoretical and practical consequences of illness in China dates from approximately the eleventh century BC, and testifies that at the time it was assumed that the well-being of the living depended to a considerable extent on

4 Also sometimes transcribed as *kampō*.

their interactions with the non-living members of the community, i.e., with their ancestors:

> An adherence to specific norms was thought to guarantee social and individual health; transgressions were known to cause the wrath of the dead, who then had to be propitiated with sacrifices. The communication between the living and the nonliving that was necessary to establish the cause of an affliction and to identify an appropriate remedy was recorded on bones and turtle shells, many of which were found in the soil, especially in the province of Henan, earlier this century. Whether the belief in ancestral intervention was supplemented by a pragmatic application of drugs or other empirically valuable means of therapy was not documented in written form at this early time. (Unschuld 1993, 20)

Unschuld (ibid.) writes that subsequent political changes during the first millennium BC, with centuries of civil war, may have been responsible for the rise of a new worldview in which the emphasis switched from the belief in the effect of ancestral curses or blessings on the health of the living to one that understood health or illness predominantly as an outcome of successful protection against the possibility or manifestation of an onslaught of not only visible but also invisible enemies, like demons.

Some of these ancestral and demonological notions survived until the present time as important aspects of the overall system of conceptualized and practical health care, although this should not be interpreted as simply adhering to a "magical" approach toward disease. According to Unschuld (1993, 20), Chinese medicine, documented since the second century BC, developed as a system of ideas and practices based on insights into the laws of nature rather than on metaphysics, while still embodying some of the fundamental tenets of those earlier approaches to understanding health and healing, namely an emphasis on cause-effect relationships and a localistic-ontological notion of disease.

As early as the first century AD, various schools of medical thought had been founded in China and were already producing diverging ideas. These were compiled under the name of the mythical Yellow Emperor and have become the classic text and fundamental source of traditional Chinese medicine—the *Huandi Neijing* 黃帝內經 or the *Inner Canon of the Yellow Emperor* (ibid.). Another important document for understanding the history of Chinese pharmaceutical knowledge is the text, dated to the third century BC, found in the archaeological site of Mawangdui and subsequently called *Wushi'er Bingfang* 五十二病方 or *Recipes for Fifty-Two Ailments*. From these and other ancient sources it is possible to deduct

the nature of the early developmental phase of Chinese medicine. According to Unschuld, central to Chinese medicine is its perception of the human organism:

> … the human organism was described in Han sources as a system of individual functional units that stored, distributed, and processed resources, which were brought into the organism from the outside or were developed within. The individual units were linked through a system of channels, thought to transport resources from one place to another and join the units to the outside world. The terminology used to describe the structure and workings of the organism is largely metaphoric and is based on images from the geographic, economic, and social environment of the Ch'in and Han dynasties in China. (Unschuld 1993, 21)

These resources that passed through the organism and represented a "vital force" thought to be the carrier of life were called *qi* 氣 in *Huangdi Neijing* (ibid.). For a long time, at least until the end of the Song dynasty in the thirteenth century, a dichotomy prevailed between two major currents, which Unschuld (ibid., 23–24) relates to the basic antagonism between Confucian-legalist thinking and the Daoist worldview: one was the so-called medicine of systematic correspondence, the other was pragmatic drug therapy. Various schools emerged within the framework of systematic correspondence, advocating the existence of two (*yin* and *yang*) or five (five phases) categories of all phenomena. It was only after the Song dynasty, between the thirteenth and fifteenth centuries, in the aftermath of the rise of Song Neo-Confucianism, that certain Confucian-legalist and Daoist tenets were united for a few centuries and attempts were made to construct a pharmacology of systematic correspondence (ibid., 24).

We should be wary, though, of explaining too much of the medical beliefs and practices simply by examining traditional Chinese ideological systems. After all, sinologists in recent decades have discredited many times the notion that Confucianism, Daoism or Buddhism were just abstract and unchanging essences that determined the shape of intellectual history (Sivin 1988, 53). Still, according to the basic Chinese medical philosophy, disease was primarily caused by an imbalance of *yin* and *yang*, resulting in a disorder of one of the five phases, expressed as a dysfunction of the corresponding organ and the organs controlled by it. Therefore, all therapies were directed toward restoration of a state of harmony (Magner 2005, 72).

If we had to forcibly juxtapose both traditions, we could say that Western anatomists studied the body as if dealing with an assemblage of bits and pieces belonging to a machine, while, in contrast, classical Chinese anatomy was more concerned with the dynamic interplay of functional systems rather than specific

organs (ibid., 71). Despite considerable debate about various details, we should not simply project modern notions of "official" versus "traditional" medicine back in the past, and we would be at great pains to establish the difference based on the "scientific" vs. "magical" divide. For example, there is little argument about the fact that Chinese scholars accepted the relationship between the heart and the circulation of the blood long before these concepts were incorporated into Western science and medicine by William Harvey (1578–1657) in the early seventeenth century (ibid., 72).

As mentioned above, Chinese medicine probably became the standard in Japan sometime from the fifth century onwards. From the formation of the centralised state the Japanese view of disease was thus primarily influenced by Chinese medicine. The description, diagnosis, and treatment of disease in premodern Japan almost always derive from Chinese texts, though Buddhist scriptures from India could also influence how disease and medicine were perceived in early Japan (Farris 1993, 376). According to Farris (ibid.) it is unclear how much the Japanese knew about disease and its treatment before Chinese and Indian influences, because about the time that the Japanese government borrowed the Chinese custom of recording outbreaks of disease it also borrowed their medical theory. Some medical practices reported during early epidemics may well derive from native Japanese view that saw disease as demonic possession to be exorcised by shamans and witch doctors (ibid.).

It certainly seems plausible that ancient oral societies primarily resorted to magical practices in battling disease, but since we have no records of their "reasoning" behind those practices we can only speculate about the actual "epistemology" of their medical thought. However, based on other "ancient" practices, like hunting, for example, which regularly involve "magical" rituals, we can speculate that just as people involved in hunting pay no less attention to the production of suitable weapons, to the studying of the behaviour of animals, and so on, ancient oral societies gave no less thought to "rational" healing practices. Just as hunters knew that magical rituals alone would not bring dinner to their table, so healers always tried to combine "magic" with healing techniques.

From the time people on the Japanese archipelago introduced Chinese medical concepts and practices along with Chinese writing system we can follow their intellectual thought processes with more certainty. By the time we reach the medieval and early modern periods, we can observe that Japanese medicine was already the site of multiple and conflicting understandings of the human body, its diseases and treatment:

> These different perspectives—especially, Buddhist, Chinese, and Western—do not reflect some inevitable movement from a less sophisticated understanding of medical science to a more sophisticated (Western) one. Rather, these different medical views often coexisted, particularly in the early modern period. (Deal 2006, 232)

We have already mentioned at the beginning of this chapter, that the so-called "traditional Chinese medicine" or *kanpō* still coexists with the so-called "Western medicine" in Japan. Although the Japanese embraced different medical traditions, both Chinese and Western medical procedures were used to treat certain common and widespread diseases. There are difficulties, however, in determining today exactly what these past diseases may have been, which is due in part to the different ways in which Chinese and Western medicine understood, described, diagnosed, and treated these conditions. Diseases known to have afflicted the Japanese include leprosy, smallpox, syphilis, malaria, tuberculosis, influenza, and measles (ibid., 233).

Chinese medicine was practiced in Japan with little modification until the early modern period. In the Heian period (794–1185), the aristocratic court physician Tanba no Yasuyori 丹波 康頼 (912–995) wrote the *Ishinpō* 醫心方[5] (*Methods at the Heart of Medicine*, 984), the oldest extant Japanese medical text that compiled Chinese medical treatises into 30 volumes. Among the topics explored in the *Ishinpō* were diseases and their origins and treatments (ibid., 233–34). There is nothing "magical" about the medical knowledge in this tenth-century treatise which covers clinical treatments drawing from the ancient Chinese traditional medicine and influenced by Indian medical theories found in Buddhist scriptures as well as Daoist references (Sugimoto and Swain 1989, 140).

From the Muromachi period (1336–1573), a medical perspective blending Neo-Confucianism and Chinese medicine known as the Li-Zhu School began to attract the interest of Japanese medical practitioners, which was partly a result of the interest taken by Japanese Zen monks in Chinese Neo-Confucian ideas, such as vital force and principle 理 (Chinese: *li*; Japanese: *ri*). The school, which derived its name from two Chinese physicians, Li Dongyuan 李東垣 (1180–1251) and Zhu Danxi 朱丹溪 (1281–1358), viewed disease as the direct consequence of a poor lifestyle and vital force imbalances. Treatment consisted of combinations of herbal medicine, acupuncture, and moxibustion (ibid., 234).

In the late Muromachi period, Manase Dōsan 曲直瀬道三 (1507–1594) established the Li-Zhu School as an orthodox approach to medical theory and

5 Also transcribed as *Ishimpō*, *Ishimhō* or *Ishinhō*.

practice. Dōsan, who was both a physician to the imperial family and a prominent teacher, trained doctors in Li-Zhu medical theory and practice at his private medical school (ibid.). His influence continued well into the Tokugawa period (1600–1868), gaining support from high-ranking warriors and the shogunate. As Deal writes, one of the great contributions made by Dōsan and his followers to the Japanese practice of Chinese medicine was to establish standard procedures for diagnosing disease:

> According to these procedures, there were four observations that a physician needed to make to accurately assess a patient's disease: 1) visual observation, especially of such things as skin color, hair condition, feces, and urine; 2) auditory observation of such things as coughs and verbal responses made to pain when the patient was touched, and olfactory observation of patient odors; 3) observation of patient responses to physician questions concerning such things as appetite and emotional state; and 4) observation of pulse and abdomen through touching the body in various ways. (Deal 2006, 234)

It was in the Tokugawa period (1600–1868) that the most important achievements took place in medicine. Medical progress was able to build on the existing base of Chinese medicine, and physicians trained in the Chinese tradition later helped to introduce Western science (Bartholomew 1989, 13). The Li-Zhu School remained influential but there was one important competing school of Chinese medicine that developed starting at the end of the seventeenth century—the School of Ancient Medicine, *kohō* 古方 or *koihō* 古医方 (Deal 2006, 234). It was rooted in a scholarly trend from the late seventeenth century developed by Confucian scholars who increasingly rejected Neo-Confucian interpretations of the Confucian classics in favour of a direct reading of the ancient texts.

One of the famous proponents of the School of Ancient Medicine was a Kyōto physician, Yamawaki Tōyō 山脇 東洋 (1706–1762), author of the famous medical text *Zōshi* 蔵志, a book on internal organs, published in 1759, who, according to Deal (ibid., 235), represents a bridge between Chinese and Western medicine as practiced in Japan. Although he administered Chinese medicine as an imperial court physician, he began to have doubts about the traditional Chinese view of the structure of the human anatomy:

> According to this traditional anatomical view, the human body was conceptualized, without any empirical or visual verification, as encompassing five organs and six viscera that interacted with each other and with the meridians, paths along the body through which vital force flowed. In

> turn, the five organs corresponded to traditional Chinese views of the five elements: heart/fire, lungs/metal, kidneys/water, liver/wood, and spleen/earth. The organs themselves were not a site of treatment in traditional Chinese medicine, that is, disease was not caused by malfunctioning organs. Rather, this anatomical view related to the idea that disease was caused by imbalances in and disruptions to vital force and the five elements. Toyo's doubts about the traditional view of human anatomy came about in part because of an anatomical description in one of the Chinese classics that asserted that the body contains nine organs. To determine which anatomical view was correct, Toyo received permission to dissect a human body, which he did in 1754. In 1759, Toyo presented the results of his observations in a publication entitled *Zoshi* (Anatomical record). Although Toyo's findings contradicted the traditional view, the five organs and six viscera theory remained orthodox. (Deal 2006, 235)

Yamawaki Tōyō's experiments and doubts in the orthodoxy of Chinese teachings were important factors in the intellectual turn toward Western medicine. What needs to be pointed out here is that this turn did not happen solely because Western medicine was recognized as "better", but because it appeared to be more in line with the intellectual shift within Confucian thought, a shift that sought greater emphasis on empirical observations. It was only after this epistemological shift that Western medicine became more interesting to the Japanese and established itself as a new competitor to Chinese medicine.

The reason for this turn to European medicine was thus not simply its supposedly inherent advantages as a medical praxis, but also an epistemological turn to the empiricism within the Confucian thought itself. There were many objections raised against Yamawaki Tōyō's bold actions of dissecting corpses, and though some were opposed to it based on the conservative argument that it went against the teachings of the ancient saints, others were arguing against it from a more utilitarian perspective—that it did nothing useful for curing patients (Ogawa 1975, 62).

One other proponent of the epistemological turn to a supposedly "ancient Way" was Kagawa Shūan 香川 修庵 (1683–1755), who is responsible for the formulation of a system of Confucian-medical thought that viewed Confucius' "Way of the sages" as being basically identical with a "Way of medicine" (Hirakawa 1998, 44). According to Kagawa, the sages of antiquity were staunch in their reverence for empirical fact, and latter-day speculative philosophers had obfuscated that emphasis (ibid.).

So, as was pointed out by Hirakawa (ibid., 43), we need to recognize the eighteenth-century intellectual trends to understand the rise of so-called Dutch studies and

Western medicine. Seventeenth-century Japan was dominated by the Cheng-Zhu School (*Cheng Zhu lixue* 程朱理學) of Neo-Confucianism, a grand system of speculative philosophy that provided the principal current of orthodox learning during the Tokugawa period (ibid.). By the end of the century more and more critical voices appeared and challenged the orthodoxy of the Cheng-Zhu School with an epistemological shift toward supposedly more original "Ancient Learning", which, as we have seen, shaped new approaches within the field of medicine as well.

The Li-Zhu School of Chinese medicine, which was a form of speculative philosophy that discussed human pathology in terms of *yin-yang*, the five elements, five circulations, and six *qi*, under the influence of "Ancient Learning" gave way to a paradigm shift that rejected such speculative ideas as latter-day inventions and attempted to return to the "Way" that medicine had supposedly been practiced in ancient China (ibid., 44). As such, scholars like Kagawa Shūan or Yamawaki Tōyō became sceptical of the traditional anatomical diagrams used by Tokugawa specialists of Chinese medicine, and instead of simply relying on such traditional guides they trusted their own experimentation. Yamawaki Tōyō, as we have noted, was the first to have performed an autopsy on an executed criminal in 1754 and recorded his observations (ibid., 45).

As Hirakawa (ibid.) points out, there was thus a clear relationship between the textual rigor of the School of Ancient Learning and the practical and empirical emphases of Dutch studies. Prior to the beginning of the Tokugawa period, interest in Western medicine focused primarily on surgery and *materia medica*, but according to Bartholomew (1989, 13–14) during the eighteenth century we can observe two important developments in Japanese medicine: the diffusion of Chinese style inoculation techniques and the founding of European anatomical studies.

New epistemological logic thus stimulated considerable interest in experimental medicine and led directly to the epochal publication in 1774 of the *Kaitai shinsho* 解體新書 (*New Text on Anatomy*) by Sugita Genpaku 杉田玄白 (1733–1817) and his colleagues. This was a translation with drawings of *Ontleedkundige Tafelen*, the Dutch edition of Johann Adam Kulmus' *Anatomische Tabellen*, first published in 1722. Sugita's translation indicates the strongly empirical approach to nature increasingly typical of Tokugawa science, which helped undermine the prestige of Chinese medicine (Bartholomew 1989, 13–14).

The publication of *Kaitai shinsho* inaugurated the study of Dutch medicine (*ranpō* 蘭方) in Japan, together with other Western medical and scientific disciplines (Deal 2006, 237). This scientific and medical knowledge that was entering Japan via the Dutch in Nagasaki convinced some intellectuals that European scientific methods were superior to both Chinese and Japanese ones, and led them to

establish the movement of Dutch studies or *rangaku* 蘭学. The word often used by Dutch studies scholars to describe the superiority of Dutch to Chinese learning is "precision" or *seimitsu* 精密. They would say that Dutch learning is "precise" (*sei* 精) and "accurate" (*seimitsu* 精密), while "Chinese" learning is "negligent" (*so* 疎) and "careless" (*sorō* 疎漏) (Aihara 2013, 27).

However, these judgments of superiority and inferiority were not followed by a complete rejection of the Confucian epistemological framework. While Sugita Genpaku was astounded by the effectiveness of Dutch measurement and research, he interpreted this from within the Confucian framework of scientific logic or "penetration of principle" (*kyūri* 窮理) (ibid.). As quoted in Aihara (ibid., 27–28), for Genpaku the Dutch science (*oranda no kyūri*) was grounded in measurement (*jissoku* 実測) and experimentation (*jikken* 実験), and was therefore superior to the "empty" Chinese science (*shina no kyūri*). Genpaku believed that Chinese medical books were based on conjectures and false analogies (憶度附会), while Dutch medical books relied on direct observation (今直観之).

Sugita Genpaku's scathing criticism of Chinese science might give the impression that Dutch studies scholars or *rangakusha* 蘭学者 completely rejected Confucian epistemology, however, it needs to be emphasised again that their turn to the Western approach happened precisely because epistemological shifts were already taking place within the Confucian paradigm.

To give one more example, we can take a look at another interesting eighteenth-century astronomer and physician, Asada Gōryū 麻田 剛立 (1734–1799). Gōryū was not part of the intellectual world that embraced Western science. He was not reading Dutch books, his knowledge of European astronomy was based on Chinese books such as 暦象考成 (*Li xiang kao cheng* or *Rekishō kōsei* in Japanese), a Chinese calendar book of the Qing dynasty, published in 1723, describing the theories of Tycho Brahe and the calendar calculations based on them (Arisaka 1968, 41). A son of a Confucian intellectual in the Kitsuki domain in Bungo province in Kyushu, Gōryū was interested in astronomy from an early age and studied it by himself while also studying medicine. He became a "court physician" of the domain lord until he decided to leave his domain for Osaka (ibid., 42; Ogawa 1956, 353). There he immersed himself in the study of the celestial calendar, constantly improving measurement instruments, and by trusting only actual measurements and empirical verification he eventually discovered what is known as Kepler's third law, namely that square of a planet's orbital period is proportional to the cube of the length of the semi-major axis of its orbit (Arisaka 1968, 42).

As for his medical studies, Gōryū belonged to the *koihō* or School of Ancient Medicine. Arisaka (ibid., 43) notes that even though he himself used to maintain

that the great advancement of the *koihō* school can be dated to 1754 when Yamawaki Tōyō performed his dissection, the real breakthrough should rather be ascribed to the positivistic and scientific spirit of medicine as practiced by Asada Gōryū. Asada also performed dissections on various animals and his anatomy of the human body, compiled by his friend Nakai Riken 中井 履軒 (1732–1817) under the title *Essorōhitsu* 越俎弄筆, was published in 1793, a year before the famous text of the Dutch studies scholars, *Kaitai shinsho* (ibid.). Asada's medical theory was thus in no way Western but was based on the positivistic and clinical type of the *koihō* school.

"How the East Was Won"

The history of "scientific" pursuit surely followed different trajectories in the various parts of the world we are considering here. By Hellenistic times in Europe and the Han period in China the scholarly disciplines that were henceforth to be regarded as learning had already settled into their respective discernible patterns. In the West, it was philosophy, medicine, the dialectic and the mathematical sciences (including astronomy and statics) that were considered standard academic pursuits, while inquiries into chemical properties were excluded from the ranks of legitimate learning. In China, the study of the Confucian canon occupied the highest position, while astrology and calendar-making played a supporting role. Medicine ranked far down the list, and the status of mathematics was even lower. Meanwhile, technology and applied science did not find favour in either world (Nakayama 1984, 53).

In most parts of today's world, it seems that the public attaches greatest scholarly respect specifically to medical doctors, which can be argued also from a sociolinguistic perspective by the fact that in many languages the word for a learned person or intellectual—*doctor*—came to be almost exclusively associated with the profession of physician. When people go to "see a doctor", they never mean a philosopher.

On the other hand, throughout history physicians in Europe as well as in Japan were considered quite low status. So, another reason why eighteenth-century physicians would want to identify as Confucian scholars was the respect these enjoyed as such in contrast to being a simple physician. Sugita Genpaku himself explained how doctors in Japan were equated with artisans and thus historically considered to be "lowly people"[6] within the Japanese hierarchical system (Liu 2013, 58). In the Tokugawa period, where social status was strictly hierarchical,

6 夫医は方技の一にして，諸史には其末に加へ，賤しきものになせり

physicians, other than those in the service of *shōgun* or *tennō*, were thus low in the social hierarchy and despised by the *bushi* or the samurai. In order to become a respected Confucian doctor, Kagawa Shūan, for example, advocated the idea of "Confucianism and Medicine as One" (儒医一本論) and thus tried to raise the status of doctors (ibid.).

Many Dutch studies scholars thus reinterpreted Confucianist notions and blended them with the study of Western natural sciences, while still considering themselves Confucianists. Their Confucianism was, therefore, readily accommodating the methodology of Western science which became a major part of Japanese perception of the West (Culiberg 2015). These *rangakusha* did not think that the West was more advanced or represented the next stage in the progress of civilization, because, as Watanabe (2012, 321) points out, such a historical view was still absent in those times. Rather, they believed that, for some reason, it was in the "national character" of the Western countries to assemble information, examine it in detail, investigate its underlying principles, and skilfully employ the knowledge thus gained.

"Science" or "learning" was understood exclusively within a Confucian framework—no science existed outside this intellectual universe, and the *rangakusha*, while retaining this Confucian sensibility, merely shifted the object of their study from China to the West (Watanabe 2012, 321).

This admiration of Western "penetration of principle" (*kyūri* 窮理) eventually led to Japanese anxiety over Western military supremacy. Shocked by China's defeat in the Opium War of 1839–1842, another famous Neo-Confucian scholar and *rangakusha*, Sakuma Shōzan 佐久間 象山 (1811–1864) had thus concluded that the West was engaging in the penetration of principle more correctly and effectively than the countries under the sway of Neo-Confucianism (ibid., 322). In the field of medicine, surgery and the treatment of epidemics such as cholera and smallpox in the nineteenth century led to a further decline in trust with regard to Chinese medicine in favour of Western medicine.

The Japanese adopted Western medicine because by the nineteenth century it was better aligned with the epistemological currents within the Japanese intellectual universe. For example, by the time anatomy became increasingly important, the Western advantage over Chinese knowledge was already immense. Chinese "ignorance" of anatomy, with the scant descriptions and crude illustrations of organs reprinted in one medical book after another, used to be explained simply by Confucian taboos against dissection. But as Sivin (1988, 59) shows, this hypothesis ignores the quite common practice of autopsy. It was just that the early Chinese understanding of health and disease was heavily weighted toward function, while that of Galen focused on structure. To the Chinese it mattered what the organs

did, not their design and spatial relations, and thus there was nothing that a doctor could accomplish by cutting into the abdomen. He was curious about the balance of body functions and the propagation of functional imbalance, and the location of an inner lesion was of minor concern (ibid.).

Even in Europe, as we have already seen, anatomical knowledge had practically no clinical utility until the middle of the eighteenth century, but it was a source of prestige for learned doctors whose reputations did not depend on practice. In China the unbroken tie between doctrine and practice removed this motivation for the development of anatomy (ibid.).

The arrival of Western medicine in Japan was doubtlessly a paradigm changing event, however the switch from the Chinese to Western medical paradigm was not simply a story of supplanting one system with the other. It was a complex process of weighing pros and cons, and the main point of contention remained the question of method. In his paper on the perception of motor disability in Tokugawa period medical texts of European medicine, Kawahara (1985) looks at various texts of Western medicine from the late Edo period where he discusses, among other things, the adoption of the so-called empirical method. It was this methodological requirement that guided the course of Japanese medical science.

The fact that Sugita Genpaku still felt the need to critique the *Huangdi Neijing* testifies to how this basic text of Chinese medicine was still important in eighteenth-century Japan. In his treatise *Kyōi no gen* 狂醫之言 (*Words of a Mad Doctor*), published in 1775, Genpaku reiterates anatomical doctrine as explained in the *Neijing*, and then states: "But if we now dissect the body of the condemned and look at the organs, the position and appearance of the organs is different,"[7] and concludes, "since the observation of the actual thing differs, it means that it is a deceiving book"[8] (Sugita 1976, 231; Kawahara 1985, 42; Liu 2013, 62).

Conclusion

As we have seen in the case of medicine in Europe and Japan, the "great divide" between "Western science" and "Chinese tradition" is not as clear as the classical narrative of "modernity" would have it. There was certainly no straightforward epistemological trajectory from "magical" thinking to "scientific" thought. Medicine has always relied both on "rational" examinations as well as "magical" beliefs. And in this sense the "West" was no more rational than the "East".

7 然るに、今刑死を剖りてその臓を観れば 、その位置 ・臓象はこれと異なるなり。

8 これを物に質すにこれと異なれば、すなはち、また人を欺くの書なり。

We have argued that the intellectual framework of Japanese physicians in the eighteenth century remained Confucian, however, as Hays (2009, 130) observes, in this the era of science and enlightenment, when human reason exulted in the powers conferred on it by the giants of the scientific revolution, in Europe too continuities rather than change dominated much of its relations with disease. Physicians' therapies, including for those who could receive the finest medical care, remained fundamentally Galenic. Even in the middle of the nineteenth century, the *miasma* theory was still the leading concept of epidemic disease.

In his book *The Ghost Map* Steven Johnson (2006) tells the story of one of the founders of modern epidemiology, John Snow, who during the 1854 cholera epidemic in London discovered that the source of the disease was polluted water and not *miasma*, and the author claims that

> [d]espite all the technological advances of the Industrial Age, Victorian medicine was hardly a triumph of the scientific method. Reading through the newspapers and medical journals of the day, what stands out is not just the breadth of remedies proposed, but the breadth of people involved in the discussion: surgeons, nurses, patent medicine quacks, public-health authorities, armchair chemists, all writing the *Times* and the *Globe* (or buying classified advertising there) with news of the dependable cure they had concocted. (Johnson 2006, 45)

As today, medical minds of that time were not in possession of the "truth" but followed theories that they devised based on their research, and which they believed explained their observations most accurately. For example, the Philadelphia debates over yellow fever's cause and nature illustrated many of the general themes of such eighteenth-century discussions. Within the general frameworks of *miasma* and contagion, a specific "scientific" theory was proposed that electric fluids in the air were "invariably fatal", and the large number of lightning rods that imperceptibly draw off the electric fluid from the clouds put Philadelphia in peril (Hays 2009, 131).

Such theories, which completely relied on contemporary scientific speculations, coexisted with more "magical" beliefs, that the yellow fever was a divine visitation punishing the wicked as a judgment on the sins and errors of the new nation of the United States, or, echoing very old theories about plague, some believed that fear itself might cause the fever (ibid.).

In this sense, the reactions and attitudes toward contagious disease we are witnessing first-hand almost daily during the current COVID-19 pandemic do not differ in essence from their eighteenth-century counterparts. People all around the world have protested against protective measures preventing the spread of

COVID-19, such as quarantines, face-mask mandates, vaccination, etc., usually in the name of personal freedom. Similarly, for several centuries European city governments struggled to control contagious diseases in the face of similar objections from merchants, who saw quarantines as unacceptable interference with trade. However, in Philadelphia in 1793 the merchant community saw the doctrine of *miasma* as a greater threat to that of contagion, for with the former it might appear to the world that fever was "native" to Philadelphia, tainting all the city's products and inhabitants, and thus the state government switched to the contagion theory, and imposed a quarantine on incoming goods and people (ibid.). Believing the disease was spread by "bad air" or contagion thus had to do with the broader social context, and the same seems to be true in the case of COVID-19.

On the other hand, the current "belief" in "science" has taken us so far that any form of possibly justifiable doubt is immediately aligned with the most absurd conspiracy theories and addressed not as part of a valid or at least potentially legitimate debate, but as a heresy. Vaccination is a powerful tool in the fight against viral diseases, but as already noted its use requires a bigger leap of faith than just taking a medicine. It is natural that from the very beginning of the use of vaccination there have been mixed feelings about the procedure. The reason why many people accepted it in the past was probably due to their greater fear of disease. Such acceptance was never based purely on "rational" deliberation of the "scientific facts", not in the least because scientific facts are much less straightforward than scientific preachers would have us believe.

When the smallpox epidemics abated substantially after the end of the eighteenth century, adherents and adversaries of the vaccine quarrelled about whether this decrease was due to the influence of vaccination. The anti-vaccinationists maintained that a connection between vaccination and the declining number of smallpox deaths could not be proved, because vaccination statistics were unreliable. They instead ascribed the decrease in the number of smallpox deaths to improved hygiene conditions and better nutrition (Huerkamp 1985, 626).

Vaccination has doubtlessly accelerated the process of medicalizing the population. However, the introduction of vaccination by no means automatically resulted in greater credibility for medical professionals in the eyes of the population. Instead, it often had the opposite effect and reinforced distrust and scepticism of professional medicine. The manifold forms of resistance that have been documented provide ample evidence of this, especially where vaccination was enforced by law (ibid., 631). And today, when with the help of vaccination we have lost much of the fear of deadly epidemics, anti-vaccination attitudes seem to be on the rise.

Concerning disenchantment and (re)enchantment, modern societies are an array of opposing tendencies, themes and forces (Jenkins 2000, 13). We tend to believe that our "modern" and disenchanted world is separated from the "premodern" experience in which the belief in magic was replaced by the belief in science. While neither "magic" nor "science" are completely straightforward ideas, it is also hard to draw a simple picture of how the human mind operates following one or the other.

As Jenkins (2000, 17) claims, such scepticism is certainly part of a wider phenomenon related to our understanding of the medium- to long-term consequences of the human impact on the environment and increasing disquiet about the damage that we have done.

> Similarly, in medicine, triumphal upward progress, epitomized by antibiotics, vaccines, and advances in public health, is beginning to look increasingly fragile and uncertain as bacteria acquire resistance, viruses mutate, hospitals become dangerous, infective places again, and new human diseases appear. Apropos healing, the Western scientific model is faced with competitors—such as acupuncture or homeopathy, for example—which, although they may be rooted in radically different cosmologies, are widely believed to "work". (ibid.)

That puts us in a situation where it seems that a unified epistemological and explanatory framework for understanding the natural world which gradually gathered authority after the Enlightenment is no longer assured, and thus the "objective" knowledge of Western science is becoming increasingly understood as contingent rather than a set of permanent verities (ibid.). As Nakayama (1984, 38) writes, science has long been identified with the quest for objective truth and meeting objective standards is, to be sure, an effective means of securing support for one's theories. Yet throughout the history of science such "objective standards" have changed time and again. On the other hand, as Jenkins points out, there is little evidence for a decline in beliefs in magic, though superficially this might seem to be the case:

> Most of us, for example, no longer seek the curing powers of a wise-woman or a cunning-man if we are ill. We go to our doctor. Or, at least, *most of us* go to our doctor *first*: the certainties of scientific medicine are routinely challenged by everyday explanatory frameworks such as fate or luck (institutionalized in astrology and the like), by increasing resort to the alternative treatments which are colonizing some of the spaces previously occupied by "conventional" medicine, or by scepticism and refusal deriving from a variety of sources. (Jenkins 2000, 18)

Ever-expanding knowledge is no longer in itself believed to be enough. The world may actually be becoming somewhat more mysterious rather than less. This should not necessarily be understood as an erosion of the authority of science, but rather as a potential shift in its centre of gravity towards greater epistemological pluralism (ibid., 17). While rationalist science has, in some respects, and for the moment, triumphed, and secularization has been one of the dominant themes in modern societies over the last two centuries, the decline of magic—whether traditional or more recent—is less easy to demonstrate (ibid., 28).

As Magner (2005, 156) reminds us, many aspects of the origin, impact, and present and future threat of modern epidemics, such as AIDS or COVID-19, are still unclear, just as there are many uncertainties about the historical meaning of leprosy and the plague. However, it is not unreasonable to hope that scientific knowledge concerning pathology and epidemiology, as well as historical research illuminating the social context in which particular diseases loomed so large, will eventually allow us to ask more meaningful questions about the ways in which people assess and respond to the threat of catastrophic disease (ibid.).

By looking into the intellectual currents within the field of medicine, specifically in eighteenth-century Japan, and comparing these to those in the West, I have tried to challenge the narrative of "modernity" as a sort of uniquely Western achievement defined by "disenchantment", "rationalism" and "science". Some scholars have tried to explore the problem of why the "scientific revolution" occurred in Europe in the seventeenth century, rather than in China or Islamic areas, which reached a sophisticated level in science and technology centuries earlier. Whether there was such thing as a European scientific revolution or not, interest in astrology, alchemy, magic, religion, and related theories persisted alongside scientific breakthroughs. In that sense, I would argue against the idea that a "scientific revolution" is a valid metaphor for the transition from a "premodern" to a "modern" worldview, in which science is at the very core of life and thought (ibid., 200) as the traditional narrative would have it.

What should probably be mentioned at the end of this paper is that the application of this new mode of thought to anatomy, physiology, and medical education would have been impossible without the work of the humanist scholars in Europe as well as Asia. We have seen how Confucian intellectuals, such as Asada Gōryū, Yamawaki Tōyō or Sugita Genpaku, rooted their ideas in the ancient Confucian learning. The greatest breakthrough in anatomy in Europe happened of course with Andreas Vesalius (1514–1564), who in 1543 transformed Western concepts of the structure of the human body by publishing his great treatise, *On the Fabric of the Human Body* (*De humani corporis fabrica*), which is considered the first

anatomical treatise based on direct observation of the human body, and is still regarded as a milestone in the history of anatomy (Magner 2005, 206). Vesalius, too, was heir to the humanist medical tradition that had rediscovered the original writings of Hippocrates and Galen. Indeed, he was a member of the first generation of scholars to enjoy access to the complete works of Galen.

"Science" today seems to be increasingly separated from the "humanities" and increasingly dedicated to utilitarian technological advancement. However, it was within the humanist framework that the scientific mode of thought developed in Europe as well as in Asia, and such an interplay of epistemological shifts and philosophical contexts seems more productive in understanding our history of knowledge than relying on simple categories such as "magic", "science", "tradition" or "modernity".

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