Haijiao Wang*

The Discontinuity and Reconstruction of the Concept of Cholera in Modern Times – Based on *An Epitome of the Reports of the Medical Officers to the Chinese Imperial Maritime Customs Service, from 1871 to 1882*

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Abstract: In 19th century, the concept of "cholera", which had been connected with Chinese cosmology for thousands of years, was firstly accepted by modern science through a process of conceptual discontinuity and reconstruction. As the result of adding new scientific knowledge to the old traditional connotations, the "collective" and "inevitable" nature of Cholera, once synonymous with "epidemic", developed new characteristics and was thus accepted within the structure and parlance of modern science. This transformation is the reason why the new "Cholera" gradually separated itself from the traditional cosmology and eventually constructed a connection with modern science. The turning point which distinguished the traditional approach to the scientific one can be traced back to the imperialist modernity in 19th century. This "birth" of medical science not only changed China, but also the countries that shared the same medical philosophy, spatial orientation, national customs, and group culture through the pre-modern Chinese cultural circle. In view of the above premises, this article takes the work *An Epitome of the Reports of the Medical Officers to the Chinese Imperial Maritime Customs Service, from 1871 to 1882* as basic research material and Japan as an example, to explore the conceptual discontinuity and reconstruction of the concept of "Cholera" in the middle of 19th century.

Keywords: cholera; epidemic; discontinuity; reconstruction; Japan

***Corresponding author: Haijiao Wang**, Foreign Language Teaching Department, Nanjing University of Chinese Medicine, Nanjing, China, E-mail: katherinewang1994@foxmail.com. https://orcid.org/0000-0002-9186-0297

1 Introduction

Since modern times, the gradual formation and completeness of the world has enabled a variety of infectious diseases to spread along with the growth of trade and exchange activities. Meanwhile, the process of multi-cultural interaction has also enabled many ancient diseases to possess new characteristics and connotations of epidemics. Cholera is one of them. This ancient disease has become an actual epidemic of the mankind as the gradual formation of the world concept. In the process of its global expansion, cholera opened up more variants as "Asian cholera", "Indian cholera" and "British cholera", which can all be regarded as the medical evidence of knowledge transfer and convergence by the development of imperialist science. In the meantime, the definition of cholera was also completed the transition from a pre-modern disease to a modern epidemic through breaking and remodeling its old connotations. In order to study the forming process of the modern cholera concept, this article takes *An Epitome of the Reports of the Medical Officers to the Chinese Imperial Maritime Customs Service, from 1871 to 1882*, hereafter referred as *the Epitome*, a medical history work co-authored by professional medical men in 19th century as reference, and reconstructs the process by which the definition of cholera was connected with science in 19th century and thus was gradually separated from traditional cosmology.

2 *The Epitome* and its Cholera Records

The Epitome's prototype was the first 24 issues of *Medical Reports* from 1871 to 1882. Ever since the middle of 19th century, the treaty ports authorized by the Qing government have become the space for the extraterritoriality and the settlement, the continuous influx of foreigners' health needs in each port made the maritime customs of service recruit a group of medical officers with professional background of western medicine to maintain the health of foreigners, ensure the ship quarantine inspection, and improve environmental hygiene of ports. In 1870, the inspector-general of Chinese imperial maritime service, Robert Hart (1835–1911), decided to set up a medical journal *Medical Reports* dedicated to collecting information on diseases and environmental conditions, which regularly submitted in the form of half-year reports by medical officers. Later, more and more reports began to cover geography, diet, climate and other aspects, thus made *Medical Reports* not only a historical database of the development of modern medicine and epidemiology, but also a comprehensive document of social and cultural history. *The Epitome* compiled and arranged by the surgeon-general Charles Alexander Gordon (1820–1899) in 1884 was

a 12 year summary derived from the essence of the first 24 issues and the further research on certain valuable subjects based on forefront European medical theories then.

With reference to Cholera in *the Epitome*, there were a total of 44 regular reports, which written by 22 medical officers from 18 Chinese treaty ports, and a 30-page special report *Cholera Epidemics in Japan: With a Monograph on the Epidemic* by Dr. Duane Buckbee Simmons (1832–1899), who was a physician and surgeon to the Ken Hospital, one of the physicians to the Cholera Lazaret, and Chairman of the Yokohama Foreign Board of Health in 1879 (Simmons, 1879, pp. 1–30). Therefore, the study on the history of modern cholera based on *the Epitome* can better show the evolution, transmission, treatment and information exchange of this disease in the Chinese cultural circle from a cross-cultural perspective, so as to provide evidence and reference for the study on the evolution history of cholera concept.

3 The Pre-modern Conditions of Cholera

Cholera has been known in China, as in India, from time immemorial. The earliest reference can be traced back to 2500 B.C. *Huang Di Nei Jing*, which considered that something huddled up in a confused manner inside the body. *Neijing* believed that jing, qi and shen were the three treasures for human bodies, and three pent-up qis leaded to vomiting and purging. In other words, the gastrointestinal symptoms were only the external manifestations of cholera, the real source of the disease was the internal obstruction of human bodies. Since then, this theory has become the basic view of cholera in TCM. In the age when doctors were still not distinguished from wizards, there were also someone who assigned the source of cholera to the evil spirits released by the god of plague. Misbehavior of the patient or the king's moral failure would lead evil spirits to the body. Because of the influence of Daoism (Taoism), the solution at that time included confession, prayer, exorcism and quarantine, etc. Temples to the Yaowang, or Princes of Medicine, are everywhere to be met with in China. The earliest of those to whom such were erected was Bian Que (407 B.C.–310 B.C.), then Hua Tuo (145–208). Reference occurred to the appearance of a plague in the A.D. 591, and to the simultaneous appearance in the sky of the five mighty ones. During that dynasty the Sui and the Tang temples were dedicated to ceremonies for averting the pestilential wrath of these mighty ones, now styled supernatural (Macgowan, 1881, p. 30). At the same time, Sun Simiao (581–682) of the Tang Dynasty re-attributed the cause of cholera to the abnormal abdominal qi caused by improper diet, and no longer related to demons in his *Beiji Qianjin Yaofang* (652). In Yuan Dynasty, Zhu Zhenheng (1281–1358) inherited Sun's views in his *Danxi Xin Fa* (1347) and ascribed the cause to retained ingesta, aided by certain external influences

such as cold, by which the male principle (yang) ceases to ascend, and the female (yin) to descend, and the diaphragm is drawn down. Then in the Ming Dynasty, Li Ting (?–?) ascribed the disease principally to heat in *Yixue Rumen* (1575), but his contemporary Zhang Jiebin (1563–1640) showed in *Jingyue Quanshu* (1624) that it was because of the prevalence of the summer and autumn heat, people did not control the ingestion of cold things, which were more likely to stimulate chill. It was not until the Qing Dynasty that Zhang Lu (1617–1699) *Zhangshi Yitong* (1695) took into account the fact that cholera was also found in the cold season, and thus considered the factors of soil and water as other potential causes. In other words, it wasn't until the Qing Dynasty that environmental factors were finally incorporated into the cause of cholera. However, environment was still only a small part of the whole cholera theory, and the fixed view that cholera was an intestinal disease caused by qi has not been shaken.

Before the middle of 19th century, the spread of cholera rarely went beyond the national borders or the range of the Asians, it to a certain extent only led to the simple symptoms of patients, the small possibility of new complications and the relevant theories which were rarely changed, thus the etiology and pathology of cholera always maintained its pre-modern situation. Driven by the view of cholera as a minor intestinal disease, Chinese doctors continued believing that if there was premonitory diarrhoea it could be checked by opium, astringents and carminatives. When the disease has manifested itself, they gave stimulants to forestall the collapse. They employed shampooing by skillful pinshers (Manson, 1877, p. 31). The focus on the relief of diarrhoea symptoms has also led to a proliferation of folk remedies. At Fuzhou during the epidemic in the summer and autumn of 1877, a number of prescriptions for the disease were posted about the city. The most of them recommended external irritation, and hot medicine, i.e., ginger, pepper, etc. For the most part the natives, during an epidemic, take refuge in gong-beating, paper-burning, and sing-songs (Somerville, 1877, p. 85). In general, Chinese doctors' therapies in 19th century were still in the pre-modern state, which not only followed the traditional means of diagnosis and treatment, but also combined characteristics of both spiritual and nature philosophical medical models, though what they did sometimes seemed more like inaction. At Wenzhou, during the summer of 1877, cholera prevailed about 10 to 14 days. Little or no treatment appeared to be received by the natives. As soon as a native doctor made out the nature of the case he departed, and the domestic offices for the dead were begun (Myers, 1878, p. 41). It seemed like the best ways to ward off disease then were isolation and death. However, it was undeniable that there were still a variety of "modern" diagnosis and therapies in TCM when treating diarrhoea caused by cholera. Therefore, it is more appropriate to consider the new cholera concept that emerged in 19th century as the result of adding many new knowledge that had never appeared before, so that the modern concept of cholera gradually

separated from the traditional cosmology and finally constructed a connection with the modern science.

4 Discontinuity and Reconstruction of Cholera Concept

Since the mid-19th century, the late Qing customs recruited a group of professional medical officers in the name of customs staff. These medical officers generally were independent practitioners qualified as pharmacists, surgeons or physicians. They had high social status, common qualifications to independently undertake medical responsibilities and universal potential to carry out medical research. They could provide their long-term and stable research results regularly for western medical colleagues to share and exchange relative knowledge under the requirements of the late Qing customs. In other words, these officers were the direct witnesses and recorders of the change of various diseases' characteristics including cholera at that time. The following are the concept of modern cholera reconstructed by medical officers in terms of therapies, space, theories, and prevention based on the cholera records from *the Epitome*.

4.1 Therapies

With the arrival of Western medicine, in late Qing Dynasty society, especially in the port cities, two sets of diagnosis and treatment began to appear in parallel, but most of the time the two sets were separated from each other since the Chinese were shy of coming under treatment by western medical men (Myers, 1878, p. 40), therefore the latter's patients were mainly foreign residents and a small number of Chinese patients whose condition had become critical. Broadly speaking, there was no great difference between these two kinds of treatment, which were mainly astringents and carminatives, stimulants, subcutaneous injection, friction or massage. However, the concept of diagnosis and treatment has been quite distinctive.

At first, the goal of the same treatment was different. For example, traditional Chinese medicine used massage as a cure, while western medicine only used that to relieve symptoms such as muscle spasms. Secondly, the diversity of cholera sources and new variants meant that a single treatment can no longer meet the needs of multiple complications, thus the experiments for the efficiency of new drugs have increased significantly. During the prevalence of cholera, 1862–1864, at Shanghai for example, a great variety of treatment was adopted, but large doses of chlorodyne with champagne and brandy were principally trusted in.

From particulars gathered from reports of cholera in America in 1873, the following ratios were given of mortality and methods of treatment employed, viz. (Gordon, 1884, p. 133): (Table 1).

Table 1: Ratios between methods of treatment and mortality in 1873.

Drug names	Mortality
Calomel in large and small doses	23 %
Calomel and opium	31 %
Calomel, opium, and acetate of lead	40 %
Calomel, opium, and stimulants	50 %
Stimulants alone	59 %
Preparation of iron	33 %
Sulphuric acid	8 %

Thirdly, different regions began to look for the best treatment plan for local patients based on actual clinical cases rather than forcing a uniform standard solution. In October and November, 1875, intravenous injection of saline solution, with subcutaneous injection of quinine, produced a good effect for a time in Shanghai, but the case proved fatal in 28 hours from the first onset (Jamieson, 1876, p. 49). At Haikou, in 1874, the treatment adopted in cases occurring among Europeans consisted of small doses of calomel every half-hour, and as much soda-water as the patient could drink (Scott, 1874, p. 66). In the summer of 1875, the hypodermic injection of chloral hydrate was tried without any good results in Shantou, but found that drug, administered by the mouth, very useful in the spasmodic stage of the disease (Scott, 1876, p. 29). When in August to September 1877, cholera prevailed very severely at Tianjin the subcutaneous injection of sulfuric ether was adopted in one case. Recovery took place, but convalescence was very slow, owing to an attack of secondary fever followed by purpura and a large abscess in the cervical region (Frazer, 1877, p. 67). April to September, 1877, Haikou's treatment consisted of frictions, packing in cloths soaked in mustard and water, hypodermic injection of morphia, administration of champagne (Somerville, 1877, p. 85). In August, 1878, a patient on board in Wenzhou was placed between the boilers of the ship, kept in a temperature of 48.9 °C, and allowed to drink freely of iced water. The following morning the patient was convalescing (Myers, 1879, p. 60).

In conclusion, although the effective therapy for cholera was still in the exploratory stage, compared with the simple symptoms, similar research ideas and pre-modern theories, cholera at this time has gradually possessed modern experimental thinking and updating speed in diagnosis and treatment due to the

diversity of symptoms and variants of the disease, thus made greater and faster progress in gaining the final answer to relieve cholera symptoms and treat other complications through rehydrating.

4.2 Space

In pre-modern societies, the spread of cholera epidemics was associated more with cities, but with little unity thinking to trace the original source of the epidemic, much less to the role reversal of the state during the worldwide pandemic. With the advance of modern medical officers' research, the role transition of countries during the pandemic was noticed for the first time. When it comes to cholera, it prevailed as an epidemic in China in 1669, on which occasion it was probably brought from Malacca. The disease prevailed in the Coromandel (coast) in 1761 and 1769, shortly after the latter date it was present in China. The epidemic of 1817 extended from Bengal to Dacca, thence north-eastward along the Yarlung Zangbo River to Rungpore, when it travelled to the borders of Tibet and South-western China. In 1820 it again appeared in the latter country, first at Canton, whence, as from a focus, it penetrated the interior of the empire by direct route, it radiated to Ningbo, and thence upwards along the Yangtze River. In 1821 it reached Beijing, where, in 1822 and again in 1823, it prevailed, forming the centre of infection in Northern Asia. In 1826 it was again borne from India to China. It reached Beijing, when advancing, it crossed the Great Wall, swept through Mongolia, and onwards to Moscow. In 1840, by means of expedition from India, the disease once again reached China. It travelled to Beijing, thence by caravan-route westward to Russia. In 1841 it prevailed in malignant form at Ningbo; in 1842–1843 it affected the men of the British East India squadron. From that date a lull in its record appears, lasting 15 years. In 1858 it reappeared; and year after year continued to do so till 1867. Then another lull, till 1877 (Simmons, 1879, p. 2).

Medical officers agreed that before 1838, China had always been an importing country of cholera which was considered to be almost unknown in China previous to that year. After several outbreaks, it was finally fixed the form of endemic disease with the fulminant nature of cholera epidemic. China began to transform into a country of origin after 1838. And in 1838 a large body of native troops arrived from India, and simultaneously with their arrival a marked increase took place in the mortality of cholera. In 1862, 141 cases of cholera were under treatment in the British squadron in China, and of these 89 were fatal. Prior to that date, the disease was prevalent among the Chinese rebels, it spread to the towns they were investing, and extended in northerly direction to Haihe. However, in 1862, cholera was very severe at Ningbo and Shanghai, attacking also the foreign residents living on shore at those places, as well as the naval and other shipping. It extended to Japan, and at Nagasaki

and Hakodate especially committed great ravages (Jamieson, 1877, p. 40). All these records indicated that, cholera epidemic in modern China took 1860s as a dividing line and went through a process of transition from an imported epidemic gradually to an endemic disease spreading both internally and externally. In terms of the epidemic caused by importation, Beijing, Wenzhou, Shanghai, Ningbo, Xiamen, Putian, Quanzhou and Haikou all had clear records of imported cases, among which Shanghai and Xiamen, where foreigners mainly gathered, were the most serious parts. Shanghai became the initiating point to other cities in China while Xiamen became the transiting point to countries outside China.

4.3 Theories

With the role transition of space brought about by cholera, theories related to the causes of cholera also made complex changes from the simple qi or cold and heat to multiple factors. The reemergence of cholera after 1875 has no longer been caused solely by imported cases. In 1882, Dr. Robert Alexander Jamieson (1842–1895) believed that the causes of cholera in Shanghai could be summed up as four kinds: sudden changes of temperature, miasma arising from the ground within and around houses in the worst parts of the native quarters, imprudence in eating and drinking, and chronic alcoholism (Jamieson, 1882, p. 43). In addition, periodic cholera has been attributed to the want of a public slaughterhouses and to the absence of suitable carriage of night-soil. The prevalence of the disease among the shipping were attributed to the consumption of water contaminated by excretions of affected Chinese. An order was issued that boiled water, or boiled rice-water, should be provided for crews, and none other to be drunk. Moreover, it was observed that, almost without exception, men seized with cholera were on a debauch, or had been on a debauch just previously. There are also views that mental conditions would produce cholera presents many analogies with malarial fevers (Jamieson, 1879a, p. 22). All of the above suggest that after the mid-19th century, cholera has already evolved from an imported epidemic into an endemic disease which can be triggered by the local environment and personal conditions of the patient. However, the old name “Huo Luan” continued to be employed. Although many medical officers did not see a strong correlation between the two versions of cholera and said that it would be inconvenient to call “Huo Luan” were it not that most people associated this term the idea of epidemicity, and therefore of inevitableness (Jamieson, 1882, p. 43).

In addition, the significant increase in the frequency of cholera has led medical officers to reflect on the distinction between cholera and other diseases with similar symptoms, including ague or an affection indistinguishable from ague and cholera presents many analogies with miasmatic fever caused by a psychological conditions;

few isolated cases of cholera morbus caused by the avoidable and unavoidable diseases which were separated by a faint line; the emergence in large numbers of malignant, Asian or epidemic cholera with the precisely same character after an interval; the secondary fever in cases of cholera; anuria that was absent in some of patients but presented in some with pernicious intermittents and so on (Jamieson, 1879a, pp. 25–26).

On the other hand, the combination of symptoms caused by the simultaneous emergence of cholera and other diseases has also altered the direction of traditional research on single disease to the coexistence of multiple diseases. Besides cholera occurring in winter and spring of 1881 at Shanghai, epidemics of measles and smallpox appeared concurrently, the former in the department of Suzhou, the latter at Nanchang. In Suzhou, the type of measles was particularly severe, the reason assigned being the drought of winter followed by a rainy and snowy spring. In the eyes of Dr. Daniel Jerome Macgowan (1814–1893), the synchronous prevalence of cholera, smallpox and measles, was a noteworthy epidemicological phenomenon (Macgowan, 1881, p. 29). In summary, medical officers concluded that whether cholera-like diseases or cholera complications directly emerge, or cholera co-epidemics with other infectious diseases, it was certain that cholera, as a pandemic, has been able to cause outbreaks independently and to combine with other diseases to cause larger additive effects.

4.4 Prevention

While cholera spread throughout the world as an epidemic, the indirect effects of different nations' habits and traditional customs also began to come to the attention of medical officers as a part of cholera knowledge. In 19th-century studies of cholera prevention, medical officers found that China was significantly less affected by cholera than India. According to those European countries in temperate zone, China located between lat. 3–53° N and India lat. 8–37° N were both supposed to be considered as "tropical countries", so the reason for the difference between two countries may also provide an answer to the cholera prevention. The first was the Chinese drinking habit. Boiling was the most common choice for the Chinese among the water purification approaches. Although almost all Chinese people only drank hot water, boiling was only mentioned in Herodotus' *History* (i. 188) in 450 B.C. in the west that Cyrus the Great, "when he is on a campaign … he carries with him water from river Choaspes, which flows past Susa, whereof alone, and of none other, does he drink. And with this Choaspes water, *previously boiled* and stored in silver vessels, many four-wheeled mule-carts are laden, which follow him whithersoever he marches." Based on their distinctive drinking habits, medical officers concluded

that in spite of the proximity of China to India, and the fact that it was much greater extent and twice as populous, cholera was comparatively rare in China as an epidemic. In explanation of this circumstance, reference has been made to the assumed fact that natives of China did not drink water of rivers and lakes to the same extent as those of India; also, that the absence of pilgrimages in China leaved the water comparatively uncontaminated. Still more potent preventives were no doubt to be found in the fact that the Chinese drank only water that has been boiled (Gordon, 1884, p. 137), so that even if cholera agents were in the water, the likelihood of the Chinese becoming ill was greatly reduced by boiling and other purification methods.

In addition, medical officers have also explored fecal issue as another source of cholera. In March 1872, Dr. Jamieson discovered that Chinese fields were plentifully manured with night-soil, more or less diluted, which has been preserved in vats until it has attained a stage of maturation judged of by some standard known to the Chinese themselves. Although Dr. Jamieson at the time under the influence of miasma theory believed that toxic vapors would spread through wet soil, decaying vegetation and puddles, and doubted whether this method would introduce harmful ingredients into the breathing air, he also admitted that whether this process of maturation was fatal to the life of those germs upon which epidemic disease was said to depend, still needed to be analyzed since until then there was no authentic case of disease arising from the adoption of the sewage irrigation has been observed in the neighbourhood of the farms so treated (Jamieson, 1871, p. 33). In India excrete were deposited direct from the body on the soil. In China and Japan manure was permitted to remain for a considerable time, even weeks or months, undergoing a kind of fermentation before being distributed on the land, thus theoretically the cholera germs were supposed to be destroyed, cholera evacuation being assumed to be dangerous in proportion to their freshness – a conclusion not borne out by experience in India (Gordon, 1884, p. 138), but the difference in the severity of cholera between the two countries still remained clear.

As a result, when Chinese living habits and agricultural practices partially offset the spread of cholera, imported cases became a more significant source, and the only way to stop its spread was port quarantine. Medical officers not only did not oppose isolation, but also acknowledged the good effect of that, they also put forward two new views. Firstly, quarantine regulations were almost useless unless they were applied to natives as well as to foreigners. Secondly, it is impossible to prevent the disease, when epidemic, from being carried from one place to another without putting a stop to trade altogether, which was not achievable anywhere in the world, at least not for long. An outbreak of cholera in Manila in 1877, for example, was probably prevented because the Spanish authorities by their action put a complete stop to trade there; thus traffic between the island and Xiamen was for the time

being interrupted. Although this claim was not supported by sufficient theoretical evidence, on that occasion the epidemic did pass over Shantou and Hong Kong. Therefore medical officers determined that it was also impossible to stop the spread of cholera from one place to another during an epidemic without stopping trade in all ports. The latter would be impossible, as the clipper trade cannot be brought under regulations. Apart from this, there is the overland traffic, and, according to the International Sanitary Conference of 1874, land quarantine was impracticable and useless, even in European countries (Manson, 1877, p. 32). In summary, medical officers believed that the suspension of cross-border traffic can only be used during the cholera epidemic for a time and not last for long, so it was necessary to resume traffic when things improved. Therefore, quarantine, as the only means to prevent the further spread of imported cases, needed to ensure the full coverage of Chinese and foreign residents, since the route of infected persons cannot be completely controlled, and the number of potential carriers was difficult to count before detection. If cholera transmission cannot be prevented from the origin, at least the expansion must be prevented in the process, to ensure both economic efficiency and human health at the same time.

Boiling water, compost habits or isolating patients were traditional control methods of cholera which have been long-existed and continued prevailing after the modern concept of cholera was reconstructed. However, this did not mean that traditional cholera knowledge already had the seeds of modernity because the legitimacy of these knowledge in the past was only related to the traditional Confucian cosmology rather than modern science. Thus only when those pre-modern factors were separated from the scientific field of modern cholera and classified into the traditional field, the relevant measures of prevention can be regarded as one part of the modern cholera, and the prevention and treatment methods would no longer be subject to the traditional concepts of cold and heat or evil qi, but rather the result of reconstruction that broke with traditional views and incorporated into the scientific field and modernity.

5 The Cholera Concept Applied in Japan before and after the Reconstruction

Before the end of the Ming Dynasty, China and Japan had frequent exchanges, and there was only an interval of 20 or 30 years between the popularity of important Chinese medical knowledge and their spread to Japan. In Japan, as in China, the early history of cholera was quite obscure. With regard the history of the disease in Japan, Dr. Simmons gave particulars as follows from a native treatise on cholera: In

the summer of 2376 era of Jimmu, i.e., A.D. 1718, a fatal illness, under the name of fever, prevailed in the city of Great Yedo; the mortality by exceeding 80,000 per month; the dead so numerous that, interment being impossible, the bodies were buried in the bay adjoining (Simmons, 1879, p. 4). The prevailing disease was quite different from ordinary fever, and was considered to have been the first occurrence of the cholera in Japan.

After the middle of the Ming Dynasty, Chinese culture, which has been less influential, was replaced by western culture, which gained increasing importance in Japan. Compared to China, Japan's contact with western culture was a century earlier. By the middle of 19th century, when China was transferring from an importing country to an exporting country of cholera epidemics, the ratio of western and Chinese doctors has reached 1:4. The cholera pandemic of 1877, which affected many countries, could be regarded as a direct example of the reconstructing connotations of cholera in Japan, where was jointly influenced by the role transition and ideological transformation in China and the west.

In 1877, a cholera epidemic broke out in Xiamen, and by the end of August it has practically ceased. In March of the following year, Dr. David Manson (1848–1878), the medical officer of Xiamen Customs, wrote: "why did cholera first appear in one corner of the comparatively small town of Amoy, and then spread over the whole town, and then to the large cities in its immediate neighbourhood, and afterwards make its appearance successively at different ports on the coast, reaching at present as far as Japan? The answer is easy enough. Amoy town itself is the port for the great cities in its neighbourhood, and the centre of a great Chinese passenger traffic (Manson, 1877, p. 31)." Therefore, Xiamen can be both the receiver of cholera epidemics and the beginner of transmission of the disease, and the most direct impact in the process of transmission was its neighbour Japan. But strictly speaking, in the 1870s, the source of cholera in Japan was not only Xiamen, British and Dutch merchant ships were also suspected.

Although the great epidemic of 1817 had its origin in India in that year, it did not reach Java until 1819, China till 1820, and Japan in 1821–1822 (Simmons, 1879, p. 3). However, because of the experience of half a century earlier, in 1877, when the outbreak occurred again in Xiamen due to the imported cases, Japan raised its vigilance in advance. On 7th of July, 1877, the Japanese consul in Xiamen telegraphed to his Government the existence of cholera in that port from about the 27th of June. In reply to a telegram from the British minster at Tokyo, Chinese Hong Kong stated that they did not consider the disease in Xiamen sufficiently severe to justify the declaration of quarantine. Yet the Japanese authorities, bearing in mind the great severity of previous epidemics, took precautions to stay its progress in the event of the disease entering that country. The existence of the Satsuma rebellion, then at its height, rendered it impossible to carry out efficiently quarantine regulations, or inspection

of ships. And so, sometime in August, the disease appeared in a small village half a mile from Nagasaki, and then quickly spread among ships in the port. The precise manner and means by which cholera reached Japan remained undiscovered (Simmons, 1879, pp. 7–8). There was only an opinion that when showers were falling slowly, no marked change was noticeable in the disease ratio; when rain was heavy for a few successive hours a rapid rise in that ratio always followed on the fourth or fifth day afterwards – a circumstance accounted for by the excess of water bringing about contamination of the wells. Throughout this epidemic in Japan the recorded cases of cholera were 12,378, of which number 6508, equal to 52.58 per cent., died. The attacks to population were 3.79 per 10,000. On 11 November, 1878, a case occurred in that portion of the town where the epidemic of the previous year had prevailed; this was followed by a serve outbreak. With few exceptions the scourge remained in the district in which it had revived. The last instance occurred on 23rd January, 1879; the total cases from its recurrence 33, death 25 (Simmons, 1879, p. 14). During the year the general statistics of the epidemic in Japan gave 975 cases, deaths 532, equal to 54.56 per cent. The cases to population not stated (Simmons, 1879, p. 15).

The circumstance that cholera was absent from Japan from 1861 to 1862 to 1877 was noticed as demonstrating that it is not endemic in that country. On the last occasion it was considered that the disease spread along the great routes of travel; that the water-supply was the immediate cause of its extended prevalence; and that the towns which suffered most were those situated near the foot of mountains, where the custom of directing streams of water through the streets was followed. With regard to the results of treatment, the statement occurred that where, as in many of the infected places, a vast majority of the medical men still followed the Chinese system, the mortality has but little exceeded the average of that in more enlightened countries. The manner in which the Japanese dispose of their night-soil was also considered to favour the spread of cholera: their system was very similar to that followed in China (Gordon, 1884, p. 137). Some scholars believed that it was the similarity in public facilities and medical theories in Japan that led to the comparability in the prevalence of cholera between China and Japan.

However, different from China where western medicine were separated from Chinese medicine, as early as the Edo period, Japan had learned western medicine through the trade port Nagasaki and formed ran gaku who were independent of Chinese medicine. In the 1870s, ran gaku and Chinese medicine have been coexisting for a 100 years in Japan. Therefore, the methods of treating cholera showed a mixture of traditional connotations and early modern scientific hygiene. First of all, the disease was attributed to diabolical agency, hence the people gave it the name of "fox, wolf and badger". Everyone adorned his gate with branches of pines and bamboo, and straw ropes; at the same time some of them offered prayers to the *kami*, others to Buddha. It was believed that all water and all fish were poisoned, so that people

dared not draw water from the pure stream of the upper Tamagawa, nor eat any fresh fish, even when it was brought alive to their doors (Simmons, 1879, p. 5). Secondly, certain instructions were issued by the Bakufu, having reference to the prevention of cholera, and to the treatment of patients suffering from that disease. They were nearly as follows: In the way of precaution, avoid of patients exposing your body to cold air; wear a cotton belt round your abdomen; be careful to avoid gluttony and excessive drinking, and the eating of indigestible food. In the way of treatment: If symptoms appear, go to bed: be extremely careful what eat and drink; keep the whole body warm, and take the medicine *hoko-san*, prepared by mixing *yekichi* and dried ginger in equal quantities, and boil; drink at intervals one or two cupfuls at a time. If you vomit and purge much, and your body becomes cold, put 2 *monme* of refined camphor into 2 *go* of spirit (*sho-chiu*), warm the mixture over the fire, dip a cotton cloth in it, and rub the body and limbs briskly. The application over the stomach of a mustard plaster composed of powdered mustard-seeds, wheaten flour and vinegar is also recommended; or, in urgent cases, mustard only mixed with hot water. Another form of medicine is this: Into a certain measure of tea pour about one-third the quantity of spirit; add a little sugar, and drink. The patient to be placed in a hot room, and his body rubbed with a cotton cloth soaked in spirit; if the extremities are cold, hot stones to be applied (Simmons, 1879, pp. 5–6).

At first glance, it seems that the demonic conjecture and the prayer have not yet gotten rid of the traditional structural views. However, in fact, after the middle of the Ming Dynasty, the influence of Chinese culture in Japan has gradually shrunk and been replaced by increasingly valued western culture, therefore the traditional knowledge of cholera in Japan still remained in the pre-Qing state and made no progress at that time. And the core of the treatment, which concentrated on diet, warmth, and the use of aromatic powder, was no longer associated with the Chinese cosmology of qi, but, as medical officers believed, did not materially differ in kind from such as might, if need were, be issued in 9th month, 47th year of Victoria, A.D. 1883 (Gordon, 1884, pp. 134–135), and thus possessed the essential characteristics of scientific legitimacy. For example, Ogata Hongan (おがた こうあん, 1810–1863) once mentioned that taking quinine, rubbing the body with warm water for muscle spasms, or using opium and morphine for vomiting and diarrhoea were all the latest treatments for cholera at that time. However, although Japanese medicine in the 19th century was westernized through constant, centuries-long contact with Dutch – among them also many German – doctors, this type of medicine – ran gaku – was still hardly "modern" from the overall perspective of medical history, but was rooted in the medicine of the 18th and early 19th centuries. What is modern in relation to cholera is just the scientific integration of modern science into hygiene from the cholera epidemic of the 1850s onwards. Therefore it could only be called as the

mixture of traditional connotations and early modern scientific hygiene rather than modern science.

6 Conclusions

Yu Xinzhong and Wang Xu believe that the great plague that broke out in the early 19th century was the first time for China to experience the cholera epidemic. And a great social and economic change which was unprecedented in history has been experienced in the meantime since the plague also carried with it profound and complex social and cultural implications from both global and Chinese historical perspectives (Yu & Xu, 2020, p. 205). If modern medical officers had their way, they would not approve of the continuous use of the old name "Huo Luan" to refer to modern epidemics that have broken with the Chinese cosmology in both structure and scope. However, given the "collective" and "inevitable" nature within the term, and the desire to describe the epidemic characteristics and susceptibility of cholera after the conceptual reconstruction, the idea of "Huo Luan" was step by step accepted into the structure of modern medical hygiene. Western medicine in general and hygiene and health protection in particular have chosen the modern experimental sciences as their reference disciplines. Environmental or conditional hygiene emerged from the early 19th century, choosing meteorology, epidemiology, chemistry and physics as reference disciplines, while microbiological and bacteriological hygiene applied experimental methods to biological phenomena in the 1860s and 1880s. In the eyes of western doctors, the new expression "Huo Luan" has already been separated from the traditional field, and been incorporated into the modern structure by expressing the high epidemic and pathogenic connotations of a more modern "cholera" concept. Through a process of discontinuity and reconstruction, "Huo Luan" became synonymous with a more "modern cholera", representing the western way of cholera of conditional hygiene, and relevant research began to shift to scientific experimental laboratory thinking and away from the old cosmology. This "birth" of medical modernity, and esp. modern hygiene not only appeared in China. But it also linked the cholera-related philosophy and the spatial orientation, national customs, and group culture behind it through the existence of the pre-modern Chinese cultural circle. As a result, the construction of modern natural and cultural landscape has brought about structural and essential changes to concepts of various diseases, including cholera, during the reconstructing process in modern times. With the rise of various diseases as modern manifestations of diseases, although traditional theories and treatment based on the Chinese cosmology still have room to flourish, most of them have become independent of scientifically recognized medical fields. And the line of discontinuity formed by distinguishing the traditional

cosmology and the modern medical narrative framework should be traced back to the imperialist line of scientific pressure, which divided tradition and modernity into two categories in 19th century.

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