Epidemic Diseases and Chinese Medicine: Example of SARS and COVID-19: Part Two

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Abstract

Along with the legends about epidemic demons, China has developed over the centuries a medical approach to epidemic diseases based on the teachings of Huang Di Nei Jing (《黄帝内经》Huangdi's Internal Classic), Nan Jing (《难经》Classic of Difficult Issues), and Shang Han Lun (《伤寒论》Treatise on Cold Damage). Other doctors and scientists participated in this evolution of knowledge, like Wang Shuhe (王叔和), Ge Hong (葛洪), Chao Yuanfang (巢元方), Sun Simiao (孙思邈), and Liu Wansu (刘完素). However, it was in the 17th century, after the great break of the Song, Jin, and Yuan eras that an innovative spirit, Wu Youke (吴又可 1582–1652) first foresaw the existence of microorganisms as we know them now. His Wen Yi Lun (《瘟疫论》Treatise on Pestilence) foreshadows an original approach to epidemic diseases, particularly emerging infectious diseases of the 21st century. After them, traditional Chinese medicine developed a comprehensive method of diagnosing and treating of these diseases (Epidemic Diseases Theory 瘟疫学说) within the School of Heat Diseases (温病学派). In a third article, we will examine some applications in the treatment of the SARS 2003–2004 epidemic (非典型肺炎) and the current COVID-19 (新型冠状病毒肺炎) pandemic.

Keywords: Chinese medical history, epidemic diseases theory, SARS, COVID-19, Sun Zi Bing Fa (《孙子兵法》Art of War), Wen Yi Lun (《瘟疫论》Treatise on Pestilence), Wu Youke (吴又可)

The Medical Approach in Huang Di Nei Jing (《黄帝内经》Huangdi’s Internal Classic) and Sun Zi Bing Fa (《孙子兵法》Art of War)

In parallel to the legends about epidemic demons, a medical approach was developed, based on observation and analysis. Huang Di Nei Jing (《黄帝内经》Huangdi’s Internal Classic) was its foundation. This fundamental work is composed of texts written between the 4th century B.C. and the 3rd century A.D., with possible additions up to the 4th century.

It includes two parts: Su Wen (《素问》Basic Questions) compiled in the Tang dynasty with the comments of Wang Bing (王冰) and Ling Shu (《灵枢》Miraculous Pivot) compiled in the Song dynasty (Note 1). There are also the two so-called “lost” chapters of the Basic Questions because they are not in the Wang Bing edition and are believed to have been “found” in the Song Dynasty. They are very important for the analysis and understanding of Epidemic Febrile Diseases (Note 2): the chapter 72 “Discussion on Acupuncture Methods” of Basic Questions and the chapter 73 “Discussion on the Diseases Caused by Abnormal Changes of Qi-Motion” of Basic Questions. These two chapters are therefore perhaps apocryphal. The problem of their authenticity is not resolved. They are particularly valuable for a global approach to the cosmological and climatic circumstances which govern the outbreak of epidemic diseases (运气学说) (Note 3).

Chapter 72 offers a division by five of the epidemic diseases – “the five miasmas (五疫)” – named with reference to the five substances of the ancient tradition: metal, wood, water, fire, and earth. This distribution seems to have had its...
limits – unless certain keys to understanding were lost – and was not further developed. However, the main lesson of this text evokes the means of avoiding contagion:

“I’ve heard (Yellow Emperor) that five kinds of pestilence can be all spread among people from adults to children with the similar manifestations; if the therapies are not applied, how to prevent the infection?”

Qibo said: “if one isn’t infected, there would be healthy Qi inside the body so that the evil Qi cannot invade; in addition one should avoid the toxic Qi, which could be inhaled and exhaled through the nose; if the healthy Qi flows out of the brain continuously, the evil Qi cannot invade.

The so-called healthy Qi originating from the brain is just to concentrate the mind in the room and imagine that heart is as bright as the sun.”[1,2]

余闻五疫之至，皆相染易，无问大小，病状相似，不施救疗，如何可得不相移易者？岐伯曰：不相染者，正气存内，邪气可干，避其毒气，天牝从来，复得其往，气出于脑，即不邪干。气出于脑，即室先想心为炎如斗柄之煌煌。

At the end of the sentence, there is a clear reference to visualization techniques known to doctors to prevent contamination when visiting a patient:

“After finishing the visualization of five-Qi of protecting the body, one should also imagine that there is shining Big Dipper over the head and then could enter the pestilence room” [Figure 1].

五气护身之毕，以想头上如北斗之煌煌，然后可入于疫室。

This process will be underlined in the commentaries of Zhu Bing Yuan Hou Lun (《诸病源候论》Treatise on the Pathogenesis and Manifestations of Various Diseases) (巜元方 Chao Yuanfang AD 610), a treatise which needs discussion again:

“If you want to ward off all evils Qi and a hundred ghosts, you always keep your heart blazing like the Big Dipper, with sparkling clarity, then the hundred evils Qi dare not intervene and you can enter the epidemic.”[3]

欲辟却众邪百鬼，常存心为炎如斗，煌煌光明，则百邪不敢干之，可以入瘟疫之中。

The text of the chapter 72 of Basic Questions then sets out couplings of acupuncture points capable to treat patients with weak constitution or aged according to the nature of the disturbances of the “celestial circumbutions”. These are complex practices that would need to be reassessed of the present time. We will come back to this in the third part of this article.

Anyway, faced with the risk of an epidemic in particular, prevention is better than cure, just as is explained in the second chapter of the same book:

“A sage would always pay less attention to treating the developed disease but emphasize treating predisesease and pay less attention to treating the developed disorder but emphasize treating predisorder, which is the information concerned.

After the disease has been developed, it is given médication, or after the disorder has been formed, it is given treatment, which is just like digging a well when one feels thirsty, or making weapons when a war is breaking out; isn’t it too late! ”[4]

是故圣人不治已病，治未病，不治已乱，治未乱，此之谓也。

夫病已成而后药之，乱已成而后治之，譬犹渴而穿井，斗而铸锥，不亦晚乎！

This wise precept still commands the approach of traditional Chinese doctors at war against COVID-19 to detect, diagnose, and treat it. Medicinal plants and drugs have definite advantages in terms of prevention and early treatment.[5] For people in direct contact with the virus, taking Chinese patent medicine reduces the risk or prevents getting sick. Because as the Huangdi’s Internal Classic teaches:

Where evils attack, there would be deficiency.[1]

“邪之所凑，其气必虚”。

It would certainly be the same with several European medicinal plants, sometimes of modest appearance, which were still well known and used in the 19th century against intermittent fevers or during epidemics.[6]

Doesn’t traditional Chinese medical art share the same principles as those of the Art of War, theorized by Sun Zi? It was the opinion of Xu Dachun (徐大椿 1693–1771) who declared:

“The Thirteen Articles of Sun Zi fully reflect the healing processes” [Figure 2] (Note 4)
孙武子十三篇 治病之法尽之矣

Chapters 31, 32, 33, and 34 (which make up Book 9 of the Basic Questions) are all devoted to the different types of heat diseases, their particular forms, and the acupunctural methods, which are applicable to them (Note 5).

Chapter 31 begins as follows as a strange résonance of what has been observed during the current COVID-19 epidemic:

“Nowadays febrile diseases are categorized as cold damage, some of which are cured and some cause death; the dead cases have the course no more than six to seven days while the survival cases, more than ten days, and why?”[1]

The repetition of these epidemics determined the vocation of Zhang Zhongjing – one of the most famous doctors that China has known, often nicknamed the Chinese Hippocrates. Living in the 1st and 2nd centuries of our era, he had to give credence to the concept of the attack of cold in a book of extraordinary subtlety that every Chinese doctor must have studied: Shang Han Za Bing Lun (《伤寒杂病论》 Treatise on Cold Damage and Miscellaneous Diseases) (Note 7). His influence was such that there have been no less than 400 books whose title refers to attacks by cold.

In his preface, Zhang Zhongjing states that he started studying medicine after losing two-thirds of his family in a few years, including seven out of ten killed by cold:

“My clan had always been numerous, with more than two hundred members, but from the period of Jiàn Ān’s reign (AD 196–220) and in less than ten years two-thirds of them disappeared among whom seven out of ten death caused by Cold. I was saddened by so many deaths that I had been unable to prevent. This is why I applied myself to the study of the teachings left by the elders, I collected a large number of antidotes.

I wrote the Shǎnhán Zhābinglùn in 16 rolls. Although I cannot cure all illnesses, good observation helps to understand the causes. Using my book we will already find more than half of the solutions.”

However, it is necessary to defy routine and use reasoning:

“There were great masters of medicine in ancient times. (Unfortunately) doctors these days do not pay attention to the true meaning of the Classics and therefore cannot profit from them as they should. Everyone keeps his own family techniques and treatments, always the same. We speak to the patient and give him a prescription, neglecting to examine his pulse.” [Figure 3].

Zhang Zhongjing therefore highlights the “cold effects (伤寒 Shang Han)” of a vast synthesis built on classical data, medical knowledge from previous centuries, procedures and treatments in vogue in his time, and knowledge from his own experience. This unique book is also the oldest Chinese treatise on the therapy of febrile illnesses. Note, however, that the
The concept of attacks by cold is more complex than it seems, hence the difficulty in translating or paraphrasing it into Western languages, such as “Body injured by great cold,” “Progressive diseases of the 3 Yin and 3 Yang,” “Treatise on harmful cold,” and “Treaty of Cold Snaps” (Note 8).

Inspired by chapter 31 of Basic Questions, the method of Zhang Zhongjing describes the establishment and the progression of the diseases according to six levels, corresponding to the Six Great Meridians, and recommends remedies appropriate to each stage and each evolution toward death [Figure 4]. His prescriptions meet very specific observation and decision-making criteria.

One of the best known is the decoction based on Ma Huang Decoction (麻黄汤) which is set out in several ways depending on the situations encountered, by adding or subtracting one or more of its components. Combining Ma Huang (麻黄 Herba Ephedrae) (3–9 g), a sudorific, diuretic, and anti-dyspneic plant with Gui Zhi (桂枝 Ramulus Cinnamomi) (3–9 g), Xing Ren (杏仁Semen Armeniacae Amarum) (3–9 g), and honey-fried Gan Cao (甘草Radix Glycyrrhizae) (3–6 g), offers an astonishing series of synergies, making it possible to treat acute bronchitis, bronchial asthma, frank lobar pneumonia or rheumatic arthritis, as soon as the signs of “external fullness due to cold wind (外感风寒表实证)” are met: headache, low back pain, arthralgia, fear of the cold but absence of sweating, moderate fever, dyspnea, floating and tight pulse, and the tongue thin and pale with a whitish coating.

But it is contraindicated in attacks of the wind-heat type and for subjects of weak constitution with sweating. In addition, this syndrome is actually quite different from that seen in SARS-CoV-2, as we will see in Part 3 of this study.

Wang Shuhe (王叔和 AD 210–285)

Succeeding Zhang Zhongjing, Wang Shuhe (AD 210–285) who had reorganized the Treatise on Cold Damage and Miscellaneous Diseases was also the author of the famous Mai Jing (《脉经》Pulse Classic), the influence of which went far beyond China [Figure 5].

However, Wang Shuhe also paid close attention to the influence of seasonal climatic disturbances that may have caused epidemics. The idea was also in germination in Huangdi’s Internal Classic. The author noted that in the years when cold prevails in the Spring, when normally the weather should be mild, or when heat prevails in the Autumn, usually a cool season, or when unexpected cold occurs in the Summer, or conversely, when lukewarm Qi replaces the cold of winter: in these years, identical discoveries are observed in adults and children. These seasonal epidemics are due to out-of-season Qi, called “off-season Qi.”

Terms such as Tian Xing (天行), Yi Bing (疫病), and Yi Li (疫疠) created or redefined by Wang Shuhe have become classic. They all mean roughly the same thing to describe particular climatic conditions that can cause seasonal epidemic diseases. Hence, Wang Shu He is rightly regarded as the founder of the “theory of epidemic factors linked to seasonal Qi (时行之气).

Great progress was then made in the differential diagnosis and the prevention of the contagious diseases by two famous doctors of whom the first lived at the time of the Eastern Jin (AD 317–420) and the second under the Sui dynasty (AD 581–618): Ge Hong and Chao Yuanfang.
Ge Hong (葛洪 AD 281–341)

Ge Hong perfected the observations of his predecessors on seasonal influences and paid attention to the role of the prevailing winds in a year [Figure 6]. He spotted the years of unusual epidemic miasma, when “pestilence accompanied by toxic genius” raged (戾气兼挟鬼毒), as he called them. As such, he was the instigator of a “toxi-infectious” approach before the letter of epidemic diseases which was taken up and developed many centuries later by the School of Heat Diseases.

“Attacks by Cold, Seasonal Qi, Heat Epidemics are three names to say a kind of disease, with little difference as to their nature. in a year on which there are miasmas accompanied by a toxic genius, we speak of Hot Diseases”

伤寒，时气瘟疫三名同一病耳，而源本小异……其年岁中有戾气，兼挟鬼毒相注，名为温病。

Ge Hong is, therefore, considered to be the founder of the “miasmatic theory (疠气说).” His observations of great scientific value were accompanied by important discoveries in the field of parasitic and infectious diseases. He recommended the use of Artemisia annua against malaria. His Zhou Hou Bei Ji Fang (《肘后备急方》Handbook of Prescriptions for Emergencies) was the source of the discovery of artemisinin which won a Nobel Prize for Mrs. Tu Youyou (屠呦呦) in 2015 (Note 9) [Figure 7]. Very recently, the Max-Planck Institute announced that A. annua had an antiviral effect against the coronavirus. A clinical study should begin very soon in the USA. The country is still severely affected by COVID-19.

For him, however, as for Wang Shu He, these diseases remained within the very general framework of “Attacks of Cold (伤寒),” as already defined by Huangdi’s Internal Classic.

Chao Yuanfang (巢元方 AD 550–630)

Chao Yuanfang [Figure 8], who lived at the time of the Sui dynasty, began to distinguish more clearly the affections caused by cold in the strict sense and the hot contagious diseases:

“In diseases caused by Cold, when contagion can be related to a cold poison, individuals are not contagious. But when the weather of a year is unbalanced, when warmness and freshness are disturbed, individuals are infected by pestilence; contagion is very violent. We must protect ourselves from this by taking medication and other prophylactic measures.”

伤寒之病，但人有自触冒寒毒之气生病者，此则不染着他人。若因岁时不和，温凉失节，人感乖戾之气而发病者，此则多相染易。故须预服药，乃为方法以防之。 (Note 10)

This passage is revealing. Unknown expressions such as Guai Li Zhi Qi (乖戾之气) which carry the idea of a transgression of the natural order and Duo Xiang Ran Yi (多相染易) which draws attention to very contagious factors, suggest the emergence of new conceptions concerning the etiology of epidemic diseases.

In the context of a comparative study of the medical currents of the East and West, one might not fail to notice a relationship between these Chinese observations and those reported in the first and third books of the Epidemics of Hippocrates; the same intuition is expressed and the same concern to unravel the mystery of the links exists between the “constitution of the atmosphere of a year” and the occurrence of epidemic diseases [Figure 9] [8].

Today, despite all the advances in medical science, these ideas are still very topical. The seasonality of infectious diseases remains a mysterious problem, much debated by contemporary doctors and researchers. Professor Didier Raoult, director of the Mediterranean Hospital Institute for Infectious Diseases in Marseille (France), mentioned this problem
several times during his audio–visual presentations. His prophylactic method, which combines hydroxychloroquine and azithromycin, appears to have been particularly effective in blocking the progression to the severity stages of COVID-19.

Prof. D. Raoult spontaneously applied the first principle of Chinese medicine, which is to treat disease before it appears (治未病), which also means vigorous preventive action upon the detection of disease or the onset of its first symptoms (未病先防) and thus prevent its progression (已病防变). His method is, therefore, very much in line with that of a Chao Yuanfang. His defense of clinical medicine was expressed in the following formula: “the doctor can and must think like a doctor, not like a methodologist.”[9]

Zhang Zhongjing, Wang Shuhe, Ge Hong, and Chao Yuanfang are essential links in the history of Chinese medicine in search for the causes and mechanisms of epidemic. Their treatments were renowned and inspired doctors practicing in the following centuries.

**Sun Simiao (孙思邈 AD 581–682) Wang Tao (王焘 about AD 670–755)**

Under the Tang (AD 618–907), two other doctors marked the evolution of medicine in the face of epidemic febrile illnesses: Sun Simiao (Note 11) and Wang Tao.[10] Their recommendations and prescriptions are always cited and commented on in specialized books and reviews. They too forged terminology that has passed into the technical language of traditional Chinese medicine.

However, a real break was to occur under the Southern Song and Jin dynasties (AD 1127–1279).

**Pang Anshi (庞安时 11th century), Guo Yong (郭雍)**

Obliged to have a better understanding of the nature of epidemic diseases, authors like Pang Anshi (AD 1043–1100) (Note 12) and Guo Yong (approx. AD 1106–1187) discussed the theses advanced in antiquity by Wang Shuhe, Ge Hong, and Chao Yuanfang by completing them or even allowing the addition of new pathologies to *Treatise on Cold Damage* accompanied by treatments adapted to each seasonal variation (Note 13). This made them, in a certain way, the precursors of modern chronobiology.

**Liu Wansu (刘完素 about AD 1120–1200)**

With Liu Wansu, alias Liu Hejian (刘河间), the break was more radical. Also faced with the epidemics which occurred during his lifetime, probably different in their symptoms of those known in antiquity, Liu Wansu who was to become one of the four leaders in medicine of the Jin Yuan era (金元四大家) came to systematically relate the etiopathogeny of febrile epidemic diseases to a fire–heat contagion. For him, none of the usual exogenous factors, that is to say, none of the six atmospheric agents (六气) could become a cause of an epidemic without having previously undergone a transformation so that only “cold” remedies could remedy it [Figure 10]:

“The six pathogenic energies can be involved as soon as they turn into fire”

**六气皆能化火**

He thus came to design new treatments and gave birth to the School known as “Cold and Fresh (寒凉派).”

Liu Wansu had many disciples. His doctrine is very subtle. One of these disciples, Wang An Dao, probably too enthusiastic, advised to:

“Let go of Attacks caused by Cold and think only of Heat illnesses!”

**The toox-infectious epidemic theory**

Finally, the toox-infectious epidemic theory (毒邪致疫说) initiated by Ge Hong in ancient times came back in favor. *Miraculous Pivot*, it was true, had paved the way in its chapter 70 where descriptions of fistulars (鼠瘘) bring to mind those of tuberculous lymphadenitis. Toxic agents (毒气) of a cold or hot nature are said to spread and become embedded in the lymph nodes of the lymphatic vessels.[11] This is the Chinese version of our famous “scavengers,” of which the Kings of France were healed.

The character 毒 (Du): “poison,” “venom,” and “toxins,” would require a long analysis which does not belong here. It crosses the entire field of Chinese medicine and pharmacopoeia, conveying an idea of density, massive, and dominant encompasses of substances particularly harmful to humans: discomfort, disgust, and nausea being the first in such manifestations. It should be examined in the context of a comparative study, for example

**Figure 9**: (a and b) Mural depicting Galen and Hippocrates 12th century Anagni, Italy

**Figure 10**: (a and b) Liu Wansu. Founder of the School “Cold and Fresh (寒凉派)”
with some ideas from Renaissance doctors like Paracelsus (AD 1493–1541) concerning “viruses.”[13] In addition, a more precise examination of toxic and reputed “inferior” drugs (下药) of the Chinese pharmacopoeia would be necessary because they are suitable for certain aggressive diseases. “Fighting the poison with poison (以毒攻毒)” is, therefore, not a new idea in China…

The 400-year period from the beginning of the Song dynasty to the beginning of the Ming dynasty (AD 960–1368) was very rich from the point of view that concerns us. The teachings of Zhang Zhongjing, in spite of their prestige, no longer seemed sufficient on their own to face the new epidemics, the number of which continued to grow with economic boom, trade, and population growth. Perhaps, also China knew then of these climatic changes which countries of Western Europe were experiencing at the same time and which had a considerable impact on demography and economic development and on the other hand the health of populations.

This intense emulation ends up producing its effects (Note 14). It was under the Ming dynasty that the first books appeared, dealing specifically with contagious diseases, and it was in AD 1642 that the Wen Yi Lun (《瘟疫论》Treatise on Pestilence) was published by Wu Youke, the true starting point of the School of Heat Illnesses (温病学派), which was organized throughout the 268 years of the Qing dynasty (AD 1644–1912).

**AN INNOVATIVE SPIRIT WU YOuke (吴又可 AD 1582–1652)**

The socioeconomic changes of the Ming dynasty were accompanied by a large number of epidemics: 64 outbreaks in the 276 years of reign, and under the Qing dynasty which succeeded it, 74 outbreaks in 266 years (Note 15). The view of doctors of these diseases changed. Many observations were recorded, and new knowledge arose, helped by contributions from abroad. All fields of medicine were affected. It was then that Wu Youke (AD 1582–1652) appeared, a specialist in epidemiology whose insights concerning in particular the role of infectious factors in the transmission of diseases deserve to be given in detail.

In 1641, the 14th year of the reign Chong Zheng, a Wenyi (瘟疫)-type epidemic, in other words epidemic infectious disease (流行性传染病 in modern Chinese), devastated the provinces of Shandong, Jiangsu, Hebei, and Zhejiang. Wu Youxing, a native of Jiangsu province, directly confronted the problem, realized that the therapy roughly remained the method of Zhang Zhongjing (《瘟疫论》Treatise on Cold Damage). Doctors simply repeated his prescriptions; however, people died by thousands. This epidemic left a deep mark on him. He had a classic medical training which allowed him to understand what was going on; he was convinced that the cause of these diseases had remained unknown until then and that it would soon be necessary to discover it.

Wu Youke was an excellent observer. He undertook to collect his experiences and wrote in 1 year the two chapters of his Treatise on Pestilence published in 1642.[13] This small volume was to become widely known afterward. It contains many observations and very precise thoughts if not premonitory of all subsequent discoveries on infectious diseases [Figure 11].

Wu Youke begins by challenging the theory of seasonal influences as an etiological explanation for epidemic diseases. This is the first paragraph of his treaty:

> “Epidemic febrile illnesses do not come from wind, cold, summer heat, or humidity, but are caused by infestations by “different Qi (异气) found in nature”...
>
> 
>
> ...夫温疫之为病，非风、非寒、非暑、非湿，乃天地间别有一种异气所感[13]
>
> What does he mean by “different Qi”? Above all, “Qi” of another nature, different from seasonal Qi, atmospheric Qi.

The character 
(异) indeed has the meaning of “dissimilar, strange, dissident, and rebellious.” It even refers in traditional philosophy to the idea of “a spectacular and terrifying phenomenon that Heaven sends to men when their conduct is contrary to natural order and that they have disregarded the first warnings.”[14]

And (气) is to be noted, has a very broad meaning in Chinese. George Soulié de Morant (1878–1955), the great introducer of acupuncture in the West, had noted the Ancients having remarked the existence of “something” which passes in a meridian when a point is excited. He gave this influx the name of “Tsri” (Qi) which he translated for lack of anything better by the word “energy.” Soulié de Morant explains this ideogram as representing “strength of the steam lifting the lid of a pot where rice boils.” It is used constantly in everyday language to express vapor, strength, energy, respiration, breath, and by extension life. But, also anger, and in our time nerve impulse, electric impulse, TSF waves etc., The basic idea is that of immaterial, subtle force; it is the “Prana” of the Hindus “he adds.[15] Marcel Granet, for his part, speaks of “breath,” “influence,” “what in the individual and in the universe constitutes the power of life (the k’i-breadth).”[16]

![Figure 11: (a and b) Wu Youke (alias Wu Youxing 吴有性) and the Wen Yi Lun (《瘟疫论》Treatise on Pestilence)](image-url)
In medicine, the character 气 (Qi) characterizes the “vital spirits” in a sense quite close to that which this word had in Europe in the 17th century, for example in the works of Michel Ettmuller (Note 16). It also means, added with various qualifiers, fluids or humors, the movement of breath; in physics: vapors, exhalations, atmospheric air, etc.

Wu Youke calls these different “Qi” “pestilences”: Li Qi (戾气), Yi Li (疫戾), or even Za Qi (杂气 [impure Qi]), for lack of anything better and failure to see them. However, under his description, the meaning of these terms, which were already found among the ancients, has changed. If we compare with the seasonal agents (时行之气) by Wang Shuhe or the miasmatic Qi (乖戾之气) by Chao Yuanfang, we can see the difference. In the authors of antiquity and the Middle Ages, the causes of epidemics were not really distinguished from the influence specific to the four seasons: cold, heat, lukewarmness, and freshness or the six cosmic energies: wind, cold, summer heat, humidity, dryness, and fire. Their distortion, their transformations, or their “impropriety” was the direct cause of the epidemics (Note 17).

In short, the Ancients were especially interested in what is called “impropriety” was the direct cause of the epidemics (Note 17).

“Matter is only a transformation of energy, energy a change of state of matter. In fact the Qi are substance and the substance is Qi.”

夫物者气之化也，气者物之变也，气即是物，物即是气。[13]

Wu Youke comes to describe the characteristics of these pathogenic agents as he conceives them. Their first characteristic is that they are of all kinds:

“Diseases are very varied, difficult to enumerate. But each has its own tendency; if in all families and in a lot of people the symptoms are the same, it is because Impure Qi settled in clusters. If there are so many different diseases, it is because these pestilences are not unique !”

Or again:

“When a whole population is in contact with them, the disease they develop conform to its own specificity”

众人有触之者，各随其气而为诸病焉。[13]

Then, he considers that these “pestilences” have specific visceral tropisms:

“Where such pestilence enters such zangfu jingluo, it will trigger such disease”

蓄当其时，适有某气专入某脏腑经络，专发为某病，众人之病相同。[13]

In addition, they have species affinities, affecting not only humans but also animals: cows, sheep, chicken, and ducks can be infected, so epidemics are not limited to humans as we have seen recently in the world with swine and avian flu (Note 18):

“But when cows are infected we see that sheep are not, when chickens are reached ducks are not and when the men are infected poultry are not. Why? Because these pestilences are not identical”

虽然牛病而羊不病，鸡病而鸭不病，人病而禽畜不病，究其所伤不同，因其气各异也，知其气各异，故谓之杂气。[13]

Wu Youke still clearly discussed the mode of transmission of pathogens; he pinpointed the relevance of the airways, the mouth, and the nose (air and saliva) exactly as we do nowadays for influenza viruses and other respiratory viruses such as coronavirus:

“When these Influences arrive, whether young or old, robust or weak, the slightest touch makes you sick, these pathogens penetrate through your mouth and nose”

此气之来，无老少强弱，触之者即病，邪自口鼻而入 …[13]

Wu Youke paid great attention to postsurgical infections and nosocomial diseases. He attributed their polymorphism to the same “pestilences” that we now know to be microbes. But in
his day he could obviously only observe the effects. This led him to criticize the traditional phenomenological description of the “Fire of the Heart,” in his time quoted is any situation.

In addition, he observed and understood the existence of sporadic forms. He explains:

“Some years, pestilence is in massive quantities with serious damage and very high contagiousness, even the very young know it’s an epidemic...Yet, in some villages, one or two people developed some symptoms are not like the others. And when you look at them carefully you find that they develop symptoms already seen in previous years, in other places, with a striking resemblance. We don’t treat them any other way. It is in fact the Za Qi (impure Qi) of those years, but whose load is less massive, the attacks less numerous; However, it should not be concluded that this is not Za Qi.”

Unfortunately for China, Wu Youke’s most original observations and ideas could not be based on such scientific discoveries. Various historical, sociological, and cultural factors prevented China, then closed in on itself, from opening a kind of “Pastorian era” before the letter (Note 20). However, some followers of Wu Youke continued to enrich his observations and helped to systematize, within the School of Heat Diseases, a doctrine of epidemic diseases.[17]

**Development of the Epidemic Disease Theory (瘟疫学说)**

A few key figures are behind the current treatments for epidemic diseases in Chinese medicine. Let us quote the main ones.

Dai Tianzhang (戴天章 1624–1722): He was a great admirer of Wu Youke; he completed his work *Guang Wen Yi Lun* (《广瘟疫论》Discussion of Pestilence), around 1722, by specifying
the diagnostic signs which make it possible to distinguish “epidemic diseases” from “cold attacks” [Figure 14]. He indicated five methods of treating these diseases (治疫五法). His work was taken up and extended in 1866 by Lu Maoxiu (陆懋修) in a treatise devoted to heat diseases (Discussion of Pestilence) reissued in 1909 and then in 1960.

Ye Tianshi (叶天士 1667–1746) was also very influenced by Wu Youke. He excelled in the art of diagnosis and treatment. His teaching was recorded by his disciples in a treaty entitled Wen Re Lun (温热论) Treatise on Warm-Heat Disease). A new diagnostic process is exposed, known as the “Four Layers (四分) Diagnostic” Defensive, Energetic, Nourishing and Blood (卫气营血辨证), better suited to infections of the heat type, that is to say to a large number of infectious and epidemic diseases of modern nosology. He also attached great importance to the theory of Meridians. These Four Layers (四分) are no more anatomical than the Six Meridians. Rather, they represent a continuation of lines of defense of the organism, raising specific pathologies, of which the theory of the Six Meridians gives a poor rendering of its specificity [Figure 15].

The genius of Ye Tianshi was to affect them the semiology of acute febrile illnesses, of which he had previously recognized the evolutionary rules. Also, he was to be inspired, as his great predecessor Zhang Zhongjing had been, by a concept of the Internal Classic that the application to this new object completely transformed. So, that the theory of the Four Layers is no less original, and no less decisive than that of the Six Meridians for the understanding, diagnosis, and therapeutic management of these diseases.

Wu Jutong (吴鞠通 1758–1836) supplemented this new approach by introducing the theory of the Three Warmers (三焦辨证) in his Wen Bing Tiao Bian (温病条辨) Systematized Identification of Warm Diseases) (1798) [Figure 16].

Other authors also made important contributions to the treatment of epidemic diseases, notably Yang Xuan (杨璿) and Xu Lin (余霖) active at the end of the 18th century (publications of 1784 and 1794). Their therapeutic technique deserves to be studied exhaustively.[17]

Finally, Wang Mengying (王孟英) alias 王士雄 (1808–1866) wrote an explanation presentation of epidemic pathologies due to heat, Wen Re Jing Wei (温热经纬) Warp and Weft of Warm-Heat Disease), of which the “Jing (经) warp)” is formed by Zhang Zhongjing’s theory and the “Wei (纬 weft)” through, in particular, the teachings of Ye Tianshi (1667–1746) [Figure 17]. He also wrote in 1838 a two-volume book on cholera, Huo Luan Lun (霍乱论) Discussion on Cholera), completed in 1862. He recognizes that the real cause of this disease is a particular toxin-infectious agent, a “foul poison (臭毒).” About the same time, the Italian Filippo Pacini described vibrio cholerae (1854) to be followed by Robert Koch in 1883.

Notes
Note 1: Huang Di Nei Jing Su Wen (《黄帝内经素问》

It is all this knowledge accumulated over centuries that now allows the traditional Chinese medicine to offer a number of alternatives to the treatment of emerging infectious diseases such as SARS 2003–2004 or COVID-19 [Figure 18].
Note 2: For research on the origin of Neijing, by Western researchers cf. Bridgman RF. Medicine in Ancient China in Chinese and Buddhist Miscellaneous, Bruxelles; 1955. p. 13.

For readers interested in translations of the Neijing into French, let us quote mainly, Husson A. Huang Di Nei Jing Su Wen, Scientific Association of acupuncturist physicians in France, Paris; 1973, 1987. p. 14 (in French). Nguyen Van Nhi and collaborators: hoang Ti Nei King So Ouenn, Vol. 1-2 (1975), Vol. 3 (1988), Vol. 4 (1991) Editions N. V. N. Marseille. For chapter 72, see the notes by Nguyen Van Nhi and Christine Recours-Nguyen volume IV pp. 317 and 341.

Note 3: This approach is indeed based on the relations of the concomitant cycles of the Five Agents and the Six Qi (五运 六气) with the pathologies of each period. Their usefulness would be especially in the prevention of diseases.

Note 4: Xu Lingtai Medical Book Collection (《徐灵胎医书全集》) (The Origin of Medicine (医学源流论) Using Medicine as Using Soldier (用药如用兵论)) Vol. 1 p. 186, cited by Dubois J. C.: “Art of healing and art of war,” conference given within the framework of the Symposium “Understanding China, Chinese Thought and European Philosophy” Strasbourg, November 2005.

Note 5: See about these 4 chapters the relevant remarks by Patrick Nguyen, preceded by a long introduction of books IX to XVIII of Suwen: “Approach of pathological reality in ancient China. in Nguyen Van Nhi, Nguyen Patrick: Huangdi Neijing Suwen, tomme III, NVN Edition Marseille; 1988. p. 9-25.

Note 6: Wang Chong: Wang Chong Lun Heng (《王充论衡》) Theories Put in the Balance written in 83 of our era where the author discusses current opinions and criticises the superstitions of his time.
Chinese Medicine. Vol. 1. Editions Renmin Weisheng; 1980. p. 299-300 (伤寒令不相染易矣).

Note 11: Sun Simiao: Qian Jin Fang (《千金方》Prescriptions Worth a Thousand Gold Pieces), including Bei Ji Qian Jin Yao Fang (《千金要方》Essential Prescriptions Worth a Thousand Gold Pieces for Emergencies) and Qian Jin Yi Fang (《千金翼方》Supplement to the Essential Prescriptions Worth a Thousand Gold Pieces). There are annotated Chinese editions of these texts which show their relevance; that of Liu Gengsheng and Zhang Ruixian after an edition of the Song dynasty, Editions Hua Xia, Beijing 1993 and that of Li Jing Rong.《孙真人千金方》Beijing: People's Medical Publishing House; 1996. French translation of the part acupuncture by Catherine Despeux: Prescriptions of acupuncture worth a thousand ounces of Gold Treatise on acupuncture by Sun Simiao of the 7th century, Paris: Guy Trédaniel Editeur; 1987. pp. 299–312.

Note 12: Pang Anshi: Shang Han Zong Bing Lun (《伤寒综病论》General Treatise on Illnesses Caused by Cold)

Note 13: Guo Yong: Shang Han Bu Wang Lun (《伤寒补亡论》Complements to Treatise On Cold Damage) (1181), in which the author insists on “treating according to seasonal etiologies” 各因其时而治之.

Note 14: It would be interesting also to examine the ideas of Zhang Jiebin (张介宾 1563–1640 A.D.) one of the most relevant of all the commentators of the Neijing. Although he was not an innovator in the field of epidemic febrile illnesses, he devoted an entire section to them. 病气 (wenyi) from his Jing Yue Quan Shu (《景岳全书》Complete Works of Jing Yue).

Note 15: History of Chinese Medicine. Manual of History of Medicine, Institute of Chinese Medicine, Beijing; 1978. p. 47. Other sources report 39 epidemic episodes between 1408 and 1643 and three hundred and twenty-eight between that date and the end of the Qing dynasty (111); Cédéo J. (贾得道) Brief history of Chinese medicine. Taiyuan: Shanxi People’s Publishing House; 1979. p. 222-30.

Note 16: Ettmuller M. New Institutes of Medicine. Thomas Amauryl, Lyon; 1693.

Note 17: Similarly, the notion of “poison (毒 Du)” in Ge Hong and Wu Youke could be discussed. Ge Hong said: “the miasmatic heat come from toxic Qi(天行瘟疫是毒病之气)” and Wu Youke: “pestential attacks are like the poisons of Heaven-Earth (今感疫者，乃天地之毒也).” The terms are almost identical but it is not certain that the meaning is still the same.

Note 18: Louis Pasteur will discover the chicken cholera vaccine in 1879 and the rabies vaccine in 1885. With the word “vaccination” will be born immunology, the concept of cellular immunity (Metchnikoff 1884), the discovery of therapeutic effects of the fungus penicillium notatum (1928), then of the active agent of penicillin against staphylococcus (1939).

Note 19: Berche Patrick: History of a great plague: Tuberculosis, DU History of médecine Paris Descartes University, Course 26-5-2016.

Note 20: Cf. Brief history of Chinese medicine, work cited on p. 226.

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