Special Feature

# The Characteristics of Joseon Medicine: Discourses on the Body, Illustration and Dissection

Shin Dongwon

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> Kitayama: I will ask you something. We have a doctor in our country (Miwaki Toyo) who likes curious things. He published a colored book called *Zoushiiron,* which includes illustrations of the internal organs of the body, dissected from executed prisoners. While *Neijing* speaks of twelve organs, there are only nine with dissection. Also, while the large intestine was found, the small intestine was not found in dissection. He sought to justify what he found with texts such as *Shanshu* and *Zhouli*. If the theories on the locations of the body organs and their corresponding five elements disintegrate because of his findings, all of our practitioners of medicine will be ruined. Do such theories exist in your country? What is your opinion on this matter?
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> Nam Dumin: Scholars of your country like to put forth strange theories. I am not sure whether that is so because of a particular tendency. Every scholar in our country follows the principles of the emperor and his teacher Qi Po and does not seek new theories. Those who learn through dissecting are fools. Those who know without dissecting are sages. You should not be seduced. (Kitayama Shō, *Keidan oumei*, 1764)

## Introduction

Nam Dumin, a Joseon practitioner of medicine, went to Japan as a follower of the envoy and had the conversation quoted above. A number of eighteenth-century Japanese doctors sought to chart new medical paths by carrying out actual dissections using western medical texts as a guide. To a Korean doctor, however, such experiments were seen as acts of heresy. For such a doctor, the field of medicine had already been completed by the ancients, and the most important thing a practitioner of medicine should do was to study in order to discover and understand what the ancients had already accomplished. How did such a great divergence occur?

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* This article is a more developed and strengthened version of my earlier publication, "Joseon hugi sinche, jangbu e gwanhan damron eui seonggyeok," in *Muljil munhwa wa nongmin eui sarm-munhwa ro boneun hanguksa: gyosu jeongnyeon ginyeon nonchong ganhaeng,* ed. Yi Taejin (Seoul: Taehaksa, 2009) 233-268. The earlier article is an introductory work on the existence of discourses on the body, illustrations and dissection as well as the relations among them. On the other hand, this article focuses more on the characteristics and trajectory of Joseon medicine through analyzing discourses on the body, illustration and dissection.

Developments that occurred in Japan are not the topic of this article. Rather, this article mainly focuses on the conditions that existed in Joseon Korea.

The body, illustration, and dissection are related to the overall field of medicine. Traditional East Asian medicine is not an exception here. It is generally understood that traditional East Asian medicine represents a holistic or comprehensive system of medicine that emphasizes the organic character of the body, and modern western medicine represents a reductive system focusing on anatomy. However, in my opinion, such an assertion is only a half-truth. Traditional East Asian medicine is also based on the anatomy of five organs and six body parts. Traditional East Asian texts such as *Huangdi neijing* and *Nanjing* feature subject matter that would be impossible to know without anatomical knowledge. Such evidence works to support theoretical frameworks of *yin* and *yang* as well as the meridian system. Doctors of later periods also paid attention to the existence, location and function of internal organs, and verified, changed and supplemented the existing system of knowledge through (albeit limited) dissections.

What about the specific case of Korea? The aim of this article is to examine the pre-modern Korean knowledge as well as work on the body, illustration and dissection. Then we will be able to find evidence to understand the thinking of Nam Dumin, the Korean doctor in the abovementioned 1763 conversation. A relevant precedent is Yi Yeongtaek's study *Body illustrations used in our country* (in Korean) (Yi 1957). Although it is a bit dated, it nevertheless effectively displays how the tradition of illustrations continued down through Korean history. Furthermore, as a modern practitioner of medicine, Yi Yeongtaek effectively analyzed the medical features of illustrations. Yi, however, judged the "correctness" of Joseon anatomy from the perspective of modern medicine. He concluded that, although Joseon anatomy was hardly modern, it nevertheless displayed a number of features that can match up against modern anatomical knowledge. In contrast to Yi Yeongtaek's work, however, my article aims to spot the time-specific features of Joseon discourses on body, illustration and anatomy. In this article, I would like to ask three questions: 1) How did Joseon scholars understand the relationships between the body organs and the other body parts? 2) What did Koreans think of dissection, which is essential in understanding the organs of the body as well as the body itself? 3) How did the landscape of Korean understanding of the body and the organs of the body change with introduction of Western knowledge of the body and medicine? Each question is independent and can be

approached separately. However, if they can be merged together using concept of the organs of the body as the intermediary, different aspects of Korean understanding of the body during the Joseon era can be woven together. Although certainly loose, such merging may allow grasping of the continuations and discontinuations of knowledge and thought that traverse the fields of medicine, thought and society. It may also reveal the factors that determine whether such knowledge is valid.

## Introduction of anatomical charts in Chinese medical books

In Joseon society, despite little previous interest,[1] more active interest in dissection illustrations is found most often during the period between the late sixteenth century and the early seventeenth century. *Yuxue rumen* (1575) of Li Chan and *Wanbing huichun* (Recovery from Ten Thousand Diseases, 1587) of Gong Tingxian were immediately imported from the Ming. Both books contain illustrations that cover the entire body. *Yuxue rumen* has one illustration of internal organs (*Jangbudo*) and two illustrations of the meridian system. *Wanbing huichun* includes one frontal view illustration, one back view illustration and one lateral view illustration, which is a type of illustration of the inner body. The illustrations of the meridian system

1. It is difficult to know how people of the Goryeo period understood the body and the internal organs in medicine. Medical texts from the Goryeo era are extremely rare—there are fewer than ten extant items. Furthermore, even the extant texts only concern prescriptions for medication and do not include discussions of the body and the internal organs. Illustrations of the body are nonexistent. Records of concrete medical discourses on specific parts of the body begin to appear in the early Joseon period. Three items related to body illustration are worth noting. *Dongindo*, with markings of the meridian system, a drawing with names of the external body parts to aid body examination, and an illustration of five organs and six body parts. The availability of these drawings was related to state initiatives that sought to collect and organize medical knowledge. Purchase and distribution of *Dongindo*, for instance, was part of the effort to establish the study of acupuncture. In other words, it was purchased from the Ming and distributed across the country because "it was difficult to meet a good doctor and medical illustrations and books are incorrect, and acupuncture methods are incomplete." The two illustrations of *Sinjumuwonrok* were related to the state efforts to apply up-to-date medical knowledge on murder cases across the country. The illustration of *Euibang yuchwi* was imported to organize the medical knowledge of Chinese and Korean medicine. Besides this drawing, *Euibang yuchwi* also includes dozens of illustrations on the body. They represent a significant portion of drawings known in China. It is therefore not a coincidence that important illustrations on the body appeared.

included in *Yuxue rumen* is similar to that of *Dongin chimgudo*, which the Ming emperor granted to the Korean envoy. The frontal view illustration of *Wanbing huichun* is a contracted version of the "the front view illustration" and "the back view illustration" of *Sinjumuwonrok* and therefore is not something original.

On the other hand, the "Illustration of internal organs" in *Yuxue rumen* and "the lateral view illustration (*Cheuksin indo*) in *Wanbing Huichun* command attention. They appear to be the first of their kind to be introduced to Joseon Korea. Even among Chinese medical texts, there were only a few that included illustrations prior to these. The first medical book to include illustrations of the internal organs is *Jinlan xunjing (Book Beside the Golden Orchid)* of Hut Bilic during the Yuan era. Ones that include an abbreviated version of those first illustrations are *Zhenjiu liuji* (Six Volumes of Acupuncture) of Wu Kun of the early Ming and certain prints of *Yixue gangmu* (Outline of Medicine) of Lou Ying.[2] Illustrations of *Yuxue rumen* and *Wanbing huichun* are influenced by those first illustrations of Hut Bilic in both their drawings and descriptions of the drawings. The two books were said to be the two most widely-read medical texts in the field of Joseon medicine.

In addition to the illustrations themselves, "Illustration of internal organs" included short descriptions of certain body parts within the drawings. The intention of this illustration is to point out that the five internal organs and six viscera, the bones, facial organs and other parts of the body are all networked within the framework of the meridian system. Diseases were perceived to move through the body through such networks. The aim of the illustration was to enable people to better apprehend that understanding of the body.

Observing the descriptions on the illustrations, it can be discerned that this illustration of the body organs focuses on the following five things.[3] First, *jeonjung* is described. It's called the *gihae* (sea of *gi*), and it is located between the two nipples and forms the sea of bodily *gi*. It is the source of life. Second, the brain is described. The brain is a sea of bone marrow, and all bone marrow belongs to the brain. The kidneys rule it, and that is why

2. The oldest existing material is *Yixue gangmu* of the Ming era. Its author is unknown (Huang Longxiang, ed. *Zhongguo zhenjiushi tujian,* 2003, vol. 1, Qingdao chubanshe, 67.). The two remaining books besides *Yixue gangmu* are not quoted in Korean medical texts such as *Dongeui bogam*. There is no evidence that illustrations from the two other books reached Joseon Korea.
3. The analysis of the illustration's content followed the illustration included in Huang 2003:70.

the kidneys are attached to the spine. The brain, as discussed here, is a mere sea of bone marrow and does not perform the function of perception. Third, the organs of the body are divided into two sections using the diaphragm as the divider. The diaphragm stretches across the body and the liver, stomach, spleen and kidneys are placed in the lower half. Fourth, the digestive organs are described. The small intestine appears to be folded a number of times. It is connected to the top via the *yumun* (plyorus) and is connected to the large intestine via the *cheonmun* (fontanel). Liquids leaving the small intestine permeate into the bladder and the dross goes into the large intestine. The bladder is where urine leaves the body. It is also where semen is replenished. The four abovementioned factors are based on the assertion of *Neijing*.

The attempts to prove the fifth point, that the heart rules the other four, appear not have been attempted prior to this point in time. Looking at the center of the illustration, there are three stems on top of the heart membrane. They are expressed as, starting from the outside, *singye* (system related to the kidney), *gangye* (system related to the liver) and *bigye* (system related to the spleen). While there is nothing called *pyegye* (system related to the lung), the illustration of *Yuxue gangmu* has a stem called *pyesim* (system related to the lung and the heart), which connects the heart with the lungs.[4] Together, these stems place the heart as the central organ of the body, commanding the liver, spleen, lungs and kidneys. While the heart was long assumed to be the ruling organ of the five internal organs, even before *Neijing*, this illustration is the first attempt to prove it using evidence from dissection. Such ground reflects cumulative results from dissection dating back to the Song era in China.

A Joseon medical text including such illustration of the body organs is *Chimgu yogyeol* (Essence of Acupuncture and Moxibustion) of Yu Seongryong (1542-1607). Yu Seongryong published this book so that distant villages that cannot take advantage of medicine could manage health on their own using acupuncture. Almost all of its contents come from *Yuxue*

4. It appears that the item was omitted in the process of simplification. Although it is not listed on the illustration itself, there is an expression called *simgye* (system related to the heart) in the description. It could be the case that it is speaking about *simgye*. As a relevant matter, *wigye* (system related to the stomach) also can be seen in the illustration. It does not appear in the illustration of *Yixue gangmu,* however. There are expressions *sosimgye* (little system related to the heart) and *singye* (system related to the spleen) in the description box. According to *Yixue gangmu, sosimgye* refers to one of the two kidneys.

*rumen*, and included three illustrations of the body. This work is also useful in gauging the level of interest in health and well-being among the Korean literati at the time. While *Yuxue rumen* sought to educate professional practitioners of medicine, *Chimgu yogyeol* was a popular book, aiming to educate the Korean literati in ways to protect and improve one's health and well-being at home. Although the illustrations as well as the contents were reproduced from somewhere else, this does not mean that Yu Seongryong was not interested in gathering new knowledge about the body. This illustration includes a notable quote. "While scholars of the past spent all their energy researching the logic behind the universe and its beings, they do not know how their internal body organs and body parts, hair, tendons, and bones are formed. How could a doctor not know about this?" (Yu 1994:340).

## *Dongeui bogam's* "Anatomical chart without anatomy?"

The Korean practitioner of medicine who took one more step beyond the viewpoint of imported Chinese medicine was Heo Jun (1539-1615). His *Dongeui bogam* (1613) includes *Sinhyeong jangbudo* (Illustration of the body shape and inner organs) and five *Ojangdo* on each of the five organs. What are the shapes of the illustrated organs? What specific characteristics do they display? What motivated Heo Jun to draw these new drawings? Before answering these questions, a key point is that Heo Jun's illustrations are the first original illustrations of Joseon Korea. First, we'll examine *Sinhyeong jangbudo*.

*Sinhyeong jangbudo* (Illustration of the body shape and inner organs) speaks of the entire body's functions as well as the organs and other parts in the body. First and foremost, *Sinhyeong jangbudo* declared the notion that each part of the body corresponds to the movements of the heaven. The starting point of this viewpoint is different from that of Hut Bilic's anatomical charts. Hut Bilic's primary objective was determining the connections between the body organs and body parts; Heo Jun maintains that the reason for the body's existence must be first answered. That is why, referencing Sun Simiao (581-682) in *Sinhyeong jangbudo*, Heo argues that the shape and existence of the body is in accordance with heaven. That is why the head is circular and the foot is rectangular. Four limbs, five organs, six viscera, the twelve main blood vessels, 365 joints, two eyes, blood vessels, hair, teeth and everything else all reflect astronomy and weather. In addition, Heo also argued that the

Buddhist notion that the formation of the body parts corresponds to the four elements is also in line with such understanding (Heo 1994:277).

*Sinhyeong jangbudo* also suggested a new perspective that uniformity of the bodies of different persons should not be assumed. This is a point that was not brought up in previous works including those of Hut Bilic. Heo Jun used the theory of Zhu Zhenheng (1281-1358) to say, "appearances of the people differ in their lengths, weights and skin colors according to the differences of *gi* in their body organs." If the part referencing Sun Simiao speaks of the universal trait of the human body, the part referencing Zhu Zhenheng here speaks of differences among human beings. Such differences stem from the differences of *gi* in internal organs, manifesting themselves on the exterior in differences in height, body shape and color. He also declares, in addition, that medical treatments for identical symptoms may also differ due to the physical differences (Heo 1994:277).

Next, *Sinhyeong jangbudo* maintains that the Daoist view of well-being is better aligned with the true nature of life than is medicine. That is why *Sinhyeong jangbudo*, instead of painting the lines between the five internal body organs and six viscera features new content that cannot be found in works such as *Jangbudo* and *Myeongdangdo*. The parts of the brain and the spine were emphasized with names such as *Noesuhae* (Sea of the Brain), *Nihwangung* (Mud Pill Place), *Okchimgwan* (Jade Pillow Gate), *Nokrogwan* (Well Pulley Gate), and *Miryeogwan* (Tailbone Gate). Such terms were directly imported from the Daoist perspective on the body. *Noesuhae* is the *Xienjing* (Hermit Sutra)'s *sangdanjeon* (Upper Elixir Field), which is expressed as the place where *Ki* is stored. (Heo 1994:285-286). *Nihwangung* is one of the nine palaces in the brain according to Daoism. It is also called by other names such as *Huangting* (Yellow Court), Kunlun (Mount Kunlun), and *Tiengu* (Heavenly Valley). It is the place where the original god exists and the spirit goes in and out (Heo 1994: 3-4). There are three gates in the back of the body according to the *Xienjing* (Hermit Sutra*)*. The gate behind the brain is called *Okchimgwan*, the gate behind the back is called *Nokrogwan*, and the final gate behind the anus is called *Miryeogwan*. The three gates were marked as the roads where the *ki* enters the body. If the three gates open and close properly in the manner the Big Dipper functions, energy circulates in the body in the same way the Milky Way flows and circulates (Heo 1994:285-286).

Heo Jun speaks of his principle in *Dongeui bogam* by saying, "pure and quiet self-cultivation are the foundation of Daoism. Medicine cures using

medications and needles for acupuncture. That is why Daoism is pure and precise, while medicine is rough." Such a view was of course reflected in *Sinhyeong jangbudo*. By emphasizing the Daoist streak and ignoring the therapeutic context of the relations between the five internal organs and six viscera, Heo Jun made the Daoist trait of his book clear to the readers.

Lastly, in contrast to other medical texts that focused on the internal organs and the meridian system, *Sinhyeong jangbudo* of *Dongeui bogam* sought to incorporate other aspects of the body as *sinhyeong* (form of the body). It can be seen from the name itself, *Sinhyeong jangbudo*. It differs from the conventional names of other illustrations of the body: *Myeongdangdo, Jangbudo,* and *Cheuksin indo*. In addition, *Dongeui bogam* recognizes parts of the body other than the internal organs and the meridian system as equally important parts of *sinhyeong*. For example, body parts such as the head, face, eyes, mouth, lips, teeth, neck, back, chest, nipples, stomach, waist, side, armpits, arms, legs, skin, flesh, pulse, muscle tendons, and bones were designated as independent "gates" of the body. The first "gate" of the content of the book, *sinhyeongmun,* gives an outline which unites the fundamental logical aspects of life such as affection, energy, and god, the five internal organs and six viscera, and *sinhyeong*. The spirit of this section is condensed in the abovementioned *Sinhyeong jangbudo*. *Dongeui bogam* is the first known publication in the history of traditional East Asian medicine that sought to organize medicine around the notion of *sinhyeong*.

In ancient China, the system of knowledge of the body and its organs were already well-established, and such knowledge was reaffirmed or partially revised through dissections during the time of the Song era. Ming scholars of medicine such as Li Chan and Gong Tingxian succeeded that tradition and included illustrations of the body in their work. Heo Jun did not follow that system without question. Heo Jun drew illustrations of the body that fit his own philosophy of medicine. Based on the Daoist view of the body, which emphasizes the importance of *gi* flow between the brain, the spine and the Elixir Field, Heo Jun created a vast system of medicine of his own. Heo Jun believed that the system of knowledge of ancient medical texts was correct, and used the ancient texts to revise the Song-Ming tradition of anatomy.

The fact that Heo Jun did not follow the post-Song tradition of illustrations of the internal organs is evident in the *Ojangdo* he drew, too.[5] The five



5. There are two recognizable strands of tradition of *Ojangdo* in history of Chinese medicine.

illustrations of the internal organs are a bit different from previous illustrations. Body organ illustrations of *Dongeui bogam* are noticeably particular in that they were illustrated literally following the indications of ancient texts such as *Neijing, Naning* of Pyeon Jak, and *Neijinzhu* of Wang Bing, as well as Ming-era medical texts such as *Yixue Zhengchuan* and *Yuxue rumen* (Yi 1957:263). In the case of *Ganjangdo,* it schematized the contents of *Yixue rumen*, which in turn synthesized the contents of *Neijinzhu*, which states that "the shape of the liver is similar to two large leaves and one little leaf; It also looks like bulging tree bark," and the contents of *Nanjing*, which states that it "assumes the shape of three leaves on the left and four leaves on the right." In the case of *Sinjangdo*, it schematized the views of *Neijinzhu*, which depicts the heart as "looking like an unbloomed lotus and has nine holes," the views of *Yixue rumen*, which portrays the heart as having "seven holes in the middle and three pieces of hair," and the views of *Yixue Zhengchuan*, which argues that "the heart is covered by a membrane called *simporak*." In the case of *Pyejangdo*, it diagrammatized the assertion of *Neijinzhu,* "its presence is similar to broadened shoulders and has 24 holes in the middle," and the assertion of *Nanjing*, "there are eight leaves, adding six leaves and two ears." In the case of *Bijangdo,* it diagrammatized the assertion of *Neijinzhu,* which states, "it looks similar to horse's hoof and holds comfort inside." Although *Sinjangdo* also diagrammatized the assertion of *Neijing,* which states, "the kidneys are in a pair and looks as if two red beans are looking toward each other. They are connected to the back's tendon in a slightly bent fashion. They are covered with oil. Their insides are white and the outsides are black. They assume the function of holding onto vital essence of the body," it did not note the tendon of the back. Although its "net-like appearance" appears to be depicting the entry stating, "They are covered with oil. Their insides are white and the outsides are black," it remains unclear.

What Heo Jun sought to communicate by means of the five illustrations can be clearly perceived through the descriptions he wrote for each

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One strand follows Daoist thought in representing internal organs; the example of illustrations of body organs by Hu Yin is an example of this strand. Another strand is represented by the early-Ming era medical text *Zhenjiu juying (Collections of Essence of Acupuncture and Moxibustion*. The illustrations of *Zhenjiu juying* drew five internal organs and five body parts with an exception of *sanjiao (three burning points)*, which is ambiguous in terms of its location. The hexagrams and corresponding animals of the *Book of Changes* (Zhouyi) are omitted, listing only the individual organs. The illustrations of body organs of this strand became the most prevalent in East Asian medical texts. (Huang 2003:30).

illustration. For example, the description for *Ganjangdo* is the following:

> Liver's appearance is in a shape of two large leaves and one small leaf. It looks like the bark of a tree. *Small blood vessels and Grand blood vessels* of each are located in the center and emanate harmonious *gi* of the *yang*. (*Neijinzhu*). The appearance of a liver is in a shape of two big leaves and one small leaf. There are three leaves in the left and four leaves in the right. The liver looks like gaping tree barks. (*Yuxue rumen*). The liver weighs 4 *geun* 4 *nyang*. Three leaves are on the left and four leaves are on the right, totaling seven leaves. It also holds the spirit. (*Nangyeong*). (Heo 1994:541).

Looking at the text, it can be seen that what Heo wants to address with *Ganjangdo* include the liver's appearance, weight and function. According to the text of the *ganjang* section, it mentions the location of the liver, the liver diseases' pulses, types of diseases that can develop in the liver, and how to cure such diseases. *Ganjangdo* also provides an anatomical foundation for the materials that follow. The liver is not something abstract but has an actual form and presence. It also has weight, and specific internal functions. Such is also the case for other organs. This stance is also taken in his discussions of other body organs and parts. Heo spoke of the liver's length, appearance, and diameter referencing *Lingshu, Suwen*, and *Yuxue rumen*. In the case of the small intestine, Heo references *Lingshu* to articulate its length, diameter, weight, folds and capacity. He uses *Nangyeong* to discuss large intestine's length, diameter, weight, folds and capacity. He also uses *Nangyeong* to speak of the bladder, mentioning the diameter of the top part, diameter of the center, its capacity and its weight (Heo 1994:583-595).

A particular feature of the *Ojangdo* of *Dongeui bogam* is the part on the functions. By emphasizing the holes and hairs (maybe the arteries and the veins), it sought to emphasize "connecting with the energy of the universe and nature," and as a result, clarify that there are "differences of wisdom" among different persons. In the case of *Pyejangdo*, it emphasized its functions of distributing pure or turbid *gi* to other body organs and the holding of the soul. (Heo 1994:564-565). Contrary to other illustrations of *Ojangdo,* Heo Jun made his intention clear by circling in the holes. Heo Jun also assumed a similar stance for three other organs. In the case of *Ganjangdo,* Heo Jun states that, in the liver, which is in the shape of three leaves on the left and four leaves on the right, "each small vessel and gland vessel is located in the center and emanates the harmonious energy of the *yang*" (Heo 1994:541). In the

case of *Bijangdo*, the spleen, which is shaped like a horseshoe, holds *wiwan* and corresponds to the soil by assuming its shape. The energy of acupuncture goes into it repeatedly to rule the energy of *jinryeong* (true spirit). It is also where the mind resides (Heo 1994:557). In the case of *Sinjangdo*, the kidneys appear similar to two red beans. They are connected to the muscle tendon of the back, storing affection (Heo 1994:548).

In fact, *Ojangdo* of *Dongeui bogam* did not depict actual anatomy but illustrated the content of older writings such as *Neijing, Neijinzhu* of Wang Bing, and *Naning* of Pyeon Jak, as well as *Yuxue Zhengchuan* and *Yuxue rumen* (Yi 1957:263). While the Ming-era medical texts such as *Zhenjiu juying* and Ojangdo of later periods illustrated drawings that were based more on actual experiences of human anatomy, the anatomical chart of *Dongeui bogam* displayed strong retrogressive tendencies toward tradition. That stance of emphasizing ancient medical texts is within one of the motives behind the writing of *Dongeui bogam,* which sought to "correct the recent tendencies toward heterodoxy and rampant prescriptions and return to the spirit of ancient *Lingshu*" (Heo 1994:265-266). That idea is also present in *Sinhyeong jangbudo* (Illustration of the body shape and inner organs), which is listed in the introduction of *Dongeui bogam*.

*Sinhyeong jangbudo* of *Dongeui bogam* and *Ojangdo* deviate from the direction different illustrations on the body pursued since the Song era. The Yuan and Song era practitioners of medicine sought to find the anatomical foundation for the physiology of the five organs and six viscera. Illustrations of Hut Bilic's *Geumran sungyeong* and *Chimgu chwiyeong* reflect that stance. *Dongeui bogam*, however, considers such efforts to be secondary in importance. It prioritized the essence of ancient Chinese medical texts, and it sought to express the unity of the universe and the human body, differences among human bodies, emphasis on the curing spirit, and inclusion of all parts of the body. That pursuit did not expand via human dissection. It did so through a different interpretation of the body. It was an "imaginary" anatomical chart.

Why did Heo Jun include such illustrations in his book? Heo Jun did not clarify why. However, it is certain that Heo intended to exemplify something. Drawings often help the viewers to intuitively understand something. In the case of illustration on the body, the drawing displays where the body organs are located, how they look, and how they function in relation to the other organs. In this sense, the intention of Heo Jun in *Dongeui bogam* does not differ from other authors of medical texts. The difference

is that his perception of the body differed from that of his predecessors. Heo Jun inserted his Daoist worldview, as well as his inclination toward the ancient scriptures, in *Sinhyeong jangbudo* and *Ojangdo*. In this sense, beyond their utility as a method in explaining difficult concepts in medicine, Heo's illustrations also implemented the articulation of his worldview. The anatomical chart of *Dongeui bogam* became the representative illustration for the field of Joseon medicine. It is important evidence enabling understanding the nature of the late-Joseon history of medicine.

## Anatomical Justification for the Knowledge of the body

There are no notable discussions of the body and the internal organs in the field of Joseon medicine after *Dongeui bogam*. Instead, where such discourses appear is in the field of natural history. Unlike doctors, natural historians posed fundamental questions concerning the organization, structure and functions of the body. They did not take the assertions of traditional medicine and natural history at face value. They inquired into the explanation behind the organs' operation unlike doctors who accepted previous knowledge as factual without qualm. They also sought to determine the validity of their assertions at the level of internal anatomy. Yi Deokmu (1741-1793) and his grandson Yi Gyugyeong (1788-1857) are the representative examples of those who assumed such perspectives.

The person in Joseon who displayed the most interest in the internal organization of the body after *Dongeui bogam* was Yi Deokmu (1741-1793). He discussed a number of aspects of the relationship between the body and its internal organization. His expression of his own opinions without referencing others stands out as a particular feature of his work. His interests were broad: the morphology of bodily organs and the relationship of morphology to the corresponding facial features; the location of the bodily organs based on the five elements; distribution of the bodily *yin* and *yang* based on the locations of the internal organs; function of the orifices of the body as well as their explanations using *yin* and *yang*; the internal organs' order of formation; the correct locations of the esophagus and airway; how to connect the heart with the lungs; the role of the spine in the body; the location of *samcho* (three burning points) within the body; and, the locations and anatomical foundations of the body organs and parts (Yi Deokmu 1997 8:126-127). Besides the example of *Dongeui bogam*, such discussions

were almost nonexistent in other Korean books during the Joseon period. Furthermore, while *Dongeui bogam* avoids the "why" question and only lists descriptions, *Imok gubi simseo* (Writings about the ears, eyes, mouth, nose, and heart) poses the natural history question of "why" and looks for answers.

Yi Deokmu, for example, sought to discuss the validity of the knowledge of traditional medicine using the characteristics of anatomy. For instance, he answers the question "Why do the five organs correspond to the five elements" as follows:

The lungs belong to bodily hair. Because hair is dry and sharp, it is like gold. Identically, the heart belongs to the circulation of blood and the color of blood is red like that of the fire. The spleen is based on the earth. Chunks of fat are the same. In addition, the liver is based on a tree, likewise the myofascia. The kidneys are based on the bone marrow. The shape of the bone marrow is like that of water (Yi Deokmu 1997:126-127).

Yi Deokmu therefore deemed it a "legitimate characteristic" of the organs to follow their respective elements. He declares the legitimacy of the correspondence of the five organs with the five elements by stating that the heart belongs to fire in color, the spleen carries the properties of fat, the liver carries the characteristics of the fascia, and the kidneys possess the qualities of bone marrow.

His questions and answers continued. Why do the five organs of the body correspond to the facial features and the five elements? Yi Deokmu found the answer to the question in the similarity in appearance of the organs to the facial features. On the connection between the kidneys and the ears, Yi says, "The two kidneys are located next to each other. Their outsides are circular and their insides are curved and concaved. That is why the two ears are also next to each other and are shaped like wheels with holes" (Yi Deokmu 1997:126-127). Mentioning the correspondence between the lungs and the nose, Yi states, "The lungs hang down to the bottom. That is why the nose also remains hung" (Yi Deokmu 1997:126-127). On the correspondence between the heart and the tongue, The tip of the heart points to the south. That is why the lung, resembling the heart, is laid vertically and its tip is sharp" (Yi Deokmu 1997:126-127). On the correspondence between the spleen and the lip, "The positions of the spleen and the stomach are in conflict. The spleen is horizontally covering up the stomach and such is identical to the shape of the lip" (Yi Deokmu 1997:126-127). On the correspondence between the liver and the eyes, Yi says, "The liver has a corner, which looks like the shape of an eye" (Yi Deokmu 1997:126-127).

The most attention-grabbing of Yi Deokmu's discussions of the internal organs is his perspective on the *samcho* (three burning points). *Samcho* is one of the six viscera, and its existence and location have been a topic of a long and intense discussion. Yi Deokmu argues that they exist in reality, and as a typical example, pointed to the organ located below the navel and next to the bladder. The organ Yi points to is called *Myeongmun* (the Gate of Longevity), one of the two kidneys. That theory, however, is based on the ancient theory of Dan Xiang, who states, "The left kidney is the bladder and the right kidney is *myeongmun,* which is the *samcho.* It stores semen for men. For women, it is tied to the placenta in its core. There is of course a form of bladder in the *samcho*," and Yi Deokmu accepted Dan Xiang's assertion (Yi Deokmu 1997:126-127). As evidence, Yi points to the dissection of Xu Dun. In other words, "When he examined the internal organs of a person who starved to death, there was a big membrane, a size of a human hand, covering up the intestines in the bottom right next to the bladder. From there, two white strands extended up around the spine and went into the brain," (Yi Deokmu 1997:126-127) and that membrane is *samcho.* The discussion so far, however, is not an original explanation by Yi Deokmu but that of Su Che of the Song, Dan Xiang, and Xu Dun (a son-in-law of Dan Xiang). Yi does not make a reference to them in his own writing.

As can be seen, Yi Deokmu formed his perspective on the existence of *samcho*, which hasn't been clear since the ancient times, by searching for anatomical evidence.

Yi Deokmu's search for anatomical evidence wasn't limited to the realm of concepts. Let's take a look at the discussion around the question of, "Why is the spine important to the body?" On this question, Yi Deokmu states, "To make a comparison, the spine is like the stem of a tree and the pillar of a house" (Yi Deokmu 1997 8:126-127). He also states, "[the spine] is important as the five internal organs are located close to the back. The tendons of the heart and kidneys, in particular, are all connected to the spine." Such anatomical facts are particularly important to the practice of flogging. As the five organs including the heart and kidneys are connected to the spine, flogging a person on the back could be fatal. Based on this fact, the King Jeongjo prohibited the practice of flogging on the back.

Yi Deokmu sought to collect more accurate knowledge of the body using western anatomical knowledge. His recognition of some "tubes" in the body as a transport path is a representative example. Above all, Yi speaks of the connecting path between the lungs and the heart. "The lungs produce the

energy and the heart produces the blood. The muscles of the body connect the heart and the lungs to transport matter between them. Is there an empty space between them, like a hollow bamboo pole, to transport matter?" (Yi Deokmu 1997:126-127). As can be seen in the quote, Yi Deokmu believed that transportation was taking place in an empty tube instead of the muscles themselves. Next, Yi thought that there were two separate paths for the urine and the semen. Yi writes, "There are two tubes in the upper part and the lower part of the testicles, and their functions are different" (Yi Deokmu 1997:126-127). Finally, Yi sought to correct the inaccurate locations of the airway and the esophagus in older illustrations of the internal organs and viscera. In the older illustration, the airway is located behind the esophagus. Pointing to the illustration, Yi Deokmu writes, "This is questionable. If one feels on the neck, the airway is clearly in the front. The western illustration appears to be more accurate" (Yi Deokmu 1997:126-127). Beyond the above three examples, Western knowledge of anatomy appears to have influenced Yi Deokmu in his conception of the tube as a pathway for transporting matter. King Jeongjo burned the materials related to Western learning in the *Gyujanggak* after the incident of Hwang Sayeong's secret letter in 1793. *Insin seolgae doseol* (the Illustrated Explanation of the Structure of the Body), a western anatomical chart, was also included in the list of destroyed items. Yi Deokmu, a *geomseogwan* (librarian) of the *Gyujanggak*, must have seen the chart. Yi's record is the only existent record discussing western anatomical charts before Choe Hangi (1803-1877)'s *Singi cheonbeom* (Evidence of the Human Body Machine) in the late 19th century.

Yi Gyugyeong's discussion on the internal organization of the body, in a way, succeeds his grandfather Yi Deokmu's discussion. Yi Gyugyeong's discussion on the internal organization of the body was carried out in his *Jangbu jeondo yeosamcho byeonjeungseol* (Discussion on the Illustration of Inner Organs and Viscera and Three Burning Points) (Yi Gyugyeng 1993: 239a-240b). What is particular about Yi Gyugyeong's theory on the internal organization of the body is that it also displays the process of formation of anatomical knowledge on top of the finished result. Yi also included the vivid anatomical charts of Ou Xifan and 30 of his followers in drawing *Jangbu jeondo* (On the Illustration of Inner Organs and Viscera). These charts were cited from Zhang Huang's *Tushubian* (Of illustrations and calligraphies) of the Qing era. Among the records, the section on the mechanism of the body organs parts is similar to the content of Hut Bilic's illustrations (忽泰必烈).

In contrast, however, the differences of organs between different

persons and the origin of diseases due to the conditions of the five organs are better displayed here. In other words, there could be discovered an orientation to anatomical pathology and study of human constitution. "After opening up the stomach, the hearts of individual prisoners appear to be in different sizes and shapes. Some have holes and some do not. Some have hairs and some do not." The above quote shows that appearances of the organs differ among different individuals. However, there is no notion of individual merit here. *Yuxue rumen*, for example, claims that, "The depth of wisdom depends on the number of holes and hairs on the heart." Next, there is a quote, which says, "Ou Xifan had an eye disease. He had one white spot and two black spots on his liver. He often had short breath and coughed. His liver was black and had wrinkles. That means the outer and inner signs of diseases are connected." This quote reflects a view from anatomical pathology, which argues that the conditions of the organs depend on the conditions of the disease.

Yi Gyugyeong (1788-1856)'s discussion of the body encompasses the form of the body, the bone structure, appearance and functions of the internal organs, and discourses on dissection. The content of Yi's discussions is rich, including perhaps all previous discussions. This is not irrelevant and is attributable to the fact that Yi Gyugyeong's *Ojuyeon munjang jeonsango* aims to be a full-scale work of natural history. Instead of asking sporadic questions, Yi's work seeks to include all topics that a comprehensive work of natural history ought to touch upon--including the universe, nature, all materials and events, personal matters, occasions, and literary works. As a result, content on the body appears more comprehensive than that of his grandfather. What is the form of the body? How are the internal organs of the body composed? What is the body's bone structure? What are the appropriate names for individual body parts and organs? The answers relate to anatomical knowledge.

So far, we've examined how much attention Yi Deokmu and Yi Gyugyeong gave to the structure and function of internal body organs to determine correct knowledge about the body. As can be seen from the case of *samcho,* Yi Deokmu even utilized anatomical knowledge in order to make his argument more persuasive. Also, as can be seen in the case of the esophagus, he even conducted some experiments and observations himself. He also suggested anatomical features of each organ in order to prove the connection between the internal organs, *yin* and *yang* and the five elements. Yi Deokmu utilized anatomical knowledge to verify knowledge of the body.

Yi Gyugyeong focused on the conditions of the five organs as the cause of diseases. Of course, it is likely that Yi Deokmu and Yi Gyugyeong were not the only ones who made the connection between physiology/pathology and anatomical features. There must have been a number of thinkers who had the same thoughts. What distinguishes Yi Gyugyeong and Yi Deokmu is that they posed concrete questions, then considered and answered them.

## Late Joseon Scholars' Perceptions of the Practice of Dissection

It is difficult to find genuine discourses on acts of dissection in the late Joseon period. Yi Ik's *Seongho saseol* is a clear exception. In the *Ojangdo* (Illustration of Five Organs) section of *Seongho saseol* (Discussions on Small Things Written by Seongho), Yi Ik collected information on cases of dissection. It includes the only known case of dissection carried out during the Joseon dynasty.

Yi Ik recognized the fact that human dissection contributed to advances in the field of medicine. Yi Ik acknowledged a man's action in dissecting a younger sister who recovered from a serious illness after eating a large amount of cherries with their seeds. The man displayed how places in her stomach where cherry seeds got lodged produced new flesh while the entire membrane of the liver was rotten. Yi Ik notes the discovery of cherry seeds as an effective medicine. Yi Ik, in addition, mentions the case of the dissection illustration of a dead prisoner from the Sichuan province during the reign of Emperor Huizong (1100-1125). Yi Ik admits that this illustration, which depicted the shape of the *gohwang* (the part between the heart and the membrane), "…helped to advance medical knowledge by showing an internal organ in great detail." Illustrations of the dissected bodies of thirty thieves (Ou Xifan and his followers) during the reign of Emperor Renzong (1022-1063) and the dissection order of Wang Mang are also read in a similar vein. According to Yi Ik, all known dissection illustrations at the time derive from that of Ou Xifan during the Song era. It was at this time that the internal organs of the body were drawn in full detail, influencing production of the others that followed. The illustration of Hut Bilic of the Yuan era is probably a similar example. Wang Mang sliced open the stomach of Wang Sunqing, a follower of Zhai Yi, and examined the five organs and discovered the beginning and the end of a large blood vessel. Yi Ik also recognizes that

Jeon refined his medical techniques by cutting up three persons with a knife during the Japanese invasions of Korea. Lastly, Yi Ik also speculates that in *Qiging Bamai (The Eight Extraordinary Pulsing Vessels),* knowledge of blood veins found in addition to the original twelve, also became more precise through dissection.

Although Yi Ik recognized the fact that medicine advances through human dissection, he displayed clear distaste for acts of dissection per se. While he believed that,"It is right to kill one younger sister to help save ten million others," he nevertheless criticized the "foolish man" who dissected his own sister by saying that he "…will not be able to be pardoned for his sin for saving others." This was, of course, a case of murder in order to determine the cause of a disease and cannot be exonerated for any reason.

Yi Ik equally criticized the dissection of dead prisoners. Regarding the case of Du Qi, the governor of the Guangnan region who cut the thief Ou Xifan open and painted Ou's individual organs, Yi Ik expressed his anger toward the fact that Du killed and dissected Ou after enticing Ou to surrender. "Although the ancients were ardent in writing medical books to save people from death, nobody dissected dead bodies. In contrast, Du Qi dissected human beings because he was a cruel person." Yi Ik argues that, although Du Qi was recommended for the position of *daizhi* because of that deed, Du later died from a malignant disease, leaving the words, "Ou Xifan is hitting me with his fists." Yi Ik also criticized Wang Mang, saying that, although Wang Mang compared himself to other sages, he was a cruel person who was willing to dissect prisoners.

Also in the case of Jeon Yuhyeong, Yi Ik also says that Jeon was executed due to a false accusation during the Yi Gwal rebellion because of the curse of human dissection.

> In our country, there was a man called Jeon Yuhyeong, who was in the position of *champan*. He was well-versed in medicine. He produced medical texts that later helped his successors save a number of people's lives. However, he was executed during Yi Gwal's rebellion. People say, "Although he refined his medical techniques by cutting up three persons with a knife during the Japanese invasions of Korea, he also died a violent death because he brought calamity upon himself by cutting up dead bodies. (An Jeongbok 1929: 445)

Evidently, Jeon Yuhyeong was versed in medicine to the point that he could produce medical texts of his own. Jeon also dissected three dead bodies

to examine inside them for medical purposes. This article does not say what Jeon saw in the dissected bodies or how Jeon used such observations to expand his knowledge of medicine. What the quoted article reveals is the widespread popular perception that Jeon Yuhyeong died under a false charge as the result of human dissection. Jeon Yuhyeong's taboo act, stimulated by medical curiosity, was recorded in this story.

Yi Ik's *Ojangdo* features both the idea that medical knowledge expands with acts of dissection and moral criticism of dissecting dead bodies. The greater emphasis, however, appears to be on the immorality of human dissection. Not only does dissection contribute to advances in medicine, it is the final determiner of correctness of medical knowledge. It therefore has the self-contradicting duality of being something that shouldn't be done as well as something that must be done. Yi Ik's preference in this case was to discover accurate knowledge about the body without dissection. He believed that the ancients achieved this.

Despite the stance that medical knowledge gained without dissection was superior to medical knowledge gained through human dissection, Yi Gyugyeong's negative attitude toward human dissection appears to be more moderate than that of Yi Ik. Although Yi Gyugyeong speaks of "inhumane persons" in discussing the "Ou Xifan *ojangdo*," Yi's attitude in introducing four historical acts of dissection and the knowledge gained by them is largely neutral. Even in the case of Jeon Yuhyeong, instead of outright criticism, Yi expresses his feeling that "it is regretful that Jeon's illustrations are no longer available" (Yi Gyugyeng 1993:240a). Looking at this quote, it seems likely that his interest in natural history outweighs his fear related to the moral taboo.

Dissection, which was a clear taboo for the scholars of previous generations, is not a taboo for Choe Hangi. Choe appears to be shocked by the precise and accurate knowledge of anatomy of Western medicine. He saw Western medicine as more "accurate," as it was based on actual experiences of dissection.

> When there is nobody to claim the dead body, the hospital allows it to be dissected for medical students' education. After the dissection, the hospital makes sure that the body goes through a proper funeral ritual. That is why Western medicine is more knowledgeable on the profound matters of the internal organs and blood vessels. ... That is why such discussions and illustrations are based on the tradition of actual human dissection. (Choe Hangi 1994: 174)

Conversely, he believed that Chinese medicine is "untrustworthy" because it

is not based on such positive evidence and relies on arbitrary distribution of the body organs and parts to the five elements (Choe Hangi 1994:8-9).

Choe Hangi also expressed his opinion on surgical operations. Here, he explains why Chinese and Koreans are comparatively weaker in surgical operations and dissection, attributing it to"[comparative] weakness of spirit" (Choe Hangi 1994:19). Choe Hangi recognized the objectivity of Western medicine, which was achieved through human dissection. Choe recognized that, on the other side of anatomy, there was superior institutional support in western societies, as well as braver western dispositions.

Although the field of natural history, unlike the field of medicine, exhibited interest in human dissection and approved of it to a greater degree, the Korean natural history field at the time did not actively support studies of anatomy. Choe Hangi, who was most knowledgeable about western anatomy, only utilized anatomical knowledge that he gained through books, without attempting human dissection or publicly avowing its importance.

## Medical Challenge of Western Physiology

Discourses on the body and the internal organs increased in depth and diversity after the seventeenth century, when the overall vision of the world among the Korean academia enlarged. The amount of information imported from and through China also increased, and such new information was often of high quality. Amid that, Western knowledge of human dissection and physiology contained factors that could place the existing system of knowledge in doubt.

Yi Ik first introduced Western physiology and expressed his views of it in his *Seongho saseol*. Yi Ik's article, *Seogukeui*, discusses Western physiology for the first time in Joseon Korea. Yi Ik read *Zhuzhi qunzheng* (Evidence for the Creator) of the German missionary Johann Adam Schall von Bell (1591-1666; Korean name Tang Yakmang), which had to do with Galen's thinking on physiology from the ancient Greek era (Yi 1954: 209-210). It is quite long, and it has a number of areas where it displays unconventional views.

First of all, there are noticeable mentions of unheard-of organs or organs with completely different functions. The blood vessels are most representative.

> Adam Schall's[6] *Zhuzhi qunzheng* spoke of the following. …the blood flows through the blood vessels. The *nak* controls the blood vessels. The nak branches out from the liver in two directions--one to the top and the other to the bottom. They slowly divide into thinner and thinner vessels. They reach the internal organs as well as the skin and the fat. There is no place blood vessels won't go and they are countless in number. The appearance of the blood vessels is similar to a loom. Some of the vessels run straight, some of them run in curves or perpendicularly. The blood vessels that run straight are running smooth with the strength of the blood, ones that run in curves prevent lingering of the blood, and the ones that run perpendicularly forces the blood to run by accumulating it in one spot. The strength of the blood vessels protects the blood itself from harm.

Looking at the quote above, it is obvious that the blood vessels are paths that deliver blood all over the body for purification of life. They are made of large ones (*daerak*) such as arteries and veins, ordinary ones (*nak*) and capillaries (*jirak*). The notion that the heart is divided into the left and right ventricles is also new. Although conventional medicine spoke of the muscle that connects the body to the brain, the function of it is treated as something totally different--it is depicted as a path of bundled-up nerves, not a just muscle supporting the bones.

Furthermore, this book speaks of a physiology based on the liver, heart and the brain, not the five elements.

> The body assumes its form because of the bones and the flesh. However, it is always the case that the heat serves as the foundation in producing blood and energy and allowing movement and thinking. One cannot be a human if any one of them is missing. In a human body, three organs function as the rulers: the heart, the liver and the brain. All other organs of the body receive orders from these three.

According to this, the food is first chewed by the teeth and passed through the stomach. Valuable parts of it are sent to the liver, which in turn produces the blood. Valuable parts of the blood are turned into the energy of the body. Rough parts of the food become dross, and they are sent to the spleen. The spleen further divides them into valuable and invaluable parts.

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6. Tang Yakmang (1591-1666) was a Christian priest who worked in China during the Ming-Qing transition. He worked as a missionary and studied astronomy. His given name was Johann Adam Schall von Bell.

The bladder collects the harmful materials, and the kidneys absorb and store the indigestible materials. Although the spleen, bladder and kidneys serve such important functions, they cannot turn food into blood and energy like the liver, and therefore Western medicine saw the liver as the comparatively more important organ. Most of blood produced in the liver goes to all kinds of holes in the body and nourishes the whole body via the different blood vessels. However, some of the blood, around ten to twenty percent of it, goes into the heart. It first goes into the right ventricle and moves into the left ventricle. Another important change takes place here. About half of the blood that goes into the heart turns into energy for the body. Furthermore, about ten to twenty percent of the energy goes into the brain, and turns into the energy of the mind. Such energy supports the function of the five conduits and the senses and perceptions for the entire body. The lungs are completely left out in the above discussion. The breathing is assumed to be carried out by the heart.

Another difference of Western medicine is the importance it places on the blood in producing energy for the body. Western medicine thought that "the body has humid and drying energies, and the heat is always drying up the damp. To prevent the drying up of the skin and the flesh and eventually the burning of the body, the blood continuously has to be produced to stop it from happening." The blood wets the different corners of the body via the *daerak, rak*, and *jirak*.

Perhaps the most noticeable feature of Western medicine is the fact that it viewed the brain as the place of perception and thought. On this point, *Zhuzhi qunzheng* says the following:

> The brain emits the energy of perception and sensation, and its function lies in how it uses its tendons. Because of the distance, the brain cannot control all of the body using its tendons. That is why each joint of the neck and the spine are connected to the brain and help the brain to reach all parts of the body. The membrane of the brain can be divided into inner and outer layers. The inner layer is soft and the outer layer is hard, and it helps to store the energy and becomes the source [of the tendons].

There are six tendons that come out of the brain. One of them passes by the neck and the chest and goes into the mouth of the stomach. The rest remains in the crown of the head, and make the five sensory organs (the eyes, ears, nose, tongue and skin) move and sense. Then there are thirty tendons that go down along the spine. They further split and reach all corners of the body.

As to Western physiology, Yi Ik confesses that "it cannot be fully comprehended due to the differences in language and range. However, Yi Ik nevertheless says that "it cannot be abandoned because, compared to Chinese medicine, it is far more detailed and precise" (An Jeongbok 1929: 446-449). He also believed that Western physiology is correct. On the cooling and dampening function of the blood against the body's innate heat, Yi Ik confirms the notion by saying, "Most living beings have liquid in their bodies to keep warm. If [such liquids] dry up, they die. There are two things human beings inherited from their parents--energies of heat and humidity. The heat is the innate part of the body and the humidity is liquid. The blood sustains the body." On the function of the heart in relation to the blood, he says, "The heart is like the fire. It sustains life by providing heat. If it did not, the liver could not produce red-colored blood. That is why, although the blood is produced by the liver, it is the heart which circulates it." Here, Yi Ik rationalizes Western physiology by using the traditional notion of the heart is assuming the characteristics of the fire. On the existence of the blood vessels, Yi Ik rationalizes it by saying, "If I poke the skin as an experiment, blood comes out with liquid."

After learning about the anatomical knowledge of western medicine, Yi Gyugyeong realized that all aspects of western medicine, including the bodily structure, physiological mechanism, and terminologies, were different from that of traditional East Asian medicine. Yi Gyugyeong was shocked by the thoroughness of western medicine through reading texts such as Adam Schall's *Zhuzhi qunzheng*. That book discussed the length and width of the human face after discussing the overall bone structure of the body. It also discussed specific body parts such as the bones, intestines, tendons, vessels, bodily flesh, and bone density with specific quantitative data. As of this point, Yi Gyugyeong appeared to be overwhelmed by the precision and minuteness of western medicine.

Reading the traditional East Asian medical text *Nanjing*, Yi Gyugyeong thought that *Nanjing's* explanation was more accurate than that of Schall's. This book includes detailed descriptions of the internal organs' weight, location and connections with other body organs as well as the human height and lengths of human bones. The thoroughness of *Nanjing's* descriptions matches that of *Zhuzhi qunzheng*. From Yi Gyugyeong's perspective, *Nanjing's* discussions of the structure of the body and its bones match that of Schall's *Zhuzhi qunzheng*. That is why he declared, "After being surprised by reading this text, I write this to supplement the negligence of *Zhuzhi*

*qunzheng*." Yi Gyugyeong used the knowledge system's thoroughness as the criterion in judging whether specific knowledge was right or wrong. He did not think of it as right or wrong. That was the reason why he was able to tolerate two alien and contradictory systems of knowledge.

Choe Hangi, Yi Gyugyeong's contemporary, thought differently. Choe was confident that western medicine, as a system of knowledge of the body, was correct. He read the British missionary Hobson's Chinese-translated work *Quanti xinlun* (A New Treatise on Anatomy), and quoted most of its contents into his own book, *Singi cheonheom* (1866). *Singi cheonheom* means to experience the function of the human machine. Looking at the content of *Quanti xinlun,* which *Singi cheonheom* largely accepted, it consists of 39 different arguments, starting with the "Discussion on Each Part of the Body" and finishing with the "Discussion on the Creation." Between the table of contents and the main body of the book, there are 271 illustrations of the body, including a five-dimension illustration of the human bones. The book speaks of the general overview of the body in the "Short Discussion on the Body" and the "Discussion on the entire Bone Structure of the Body." The main body of the text discusses the shapes and functions of the bones and the muscles, the distribution of the brain and the neural network, the structures and functions of the facial features, physiological functions of the internal organs, and the physiology of urology and gynecology. The physiology of *Singi cheonheom,* which discusses the body structure around the bones, muscles, and nerves is different from that of traditional East Asian physiology, which explains the functions of digestion and breathing around the stomach, small intestine, large intestine, liver, phlegm, pancreas, heart, lungs, kidneys and bladder using the five internal organs and six viscera supplemented by the meridian system.

The reason why Choe Hangi, unlike Yi Gyugyeong, accepted anatomy-based western medicine was because the books he read were on the modern physiology of eighteenth century Europe. Books that Yi Gyugyeong and his predecessors read were on ancient Gallenic medicine that dominated medieval Europe. In contrast to Gallenic medicine, which was based on animal dissection, modern physiology was based on human dissection and was therefore "modern" medicine. In terms of both precision of anatomical charts as well as the depth of explanation, modern physiology was far more advanced than both traditional East Asian medicine as well as Gallenic medicine.

Although Choe Hangi considered western knowledge on the body, produced via human dissection, to be correct, he did not indiscriminately

accept the notions of the God and "spirit" as the sources of the mind in Hobson's book (Yeo & No 1993:69-78). As much as he criticized the five elements theory, Choe criticized the notion of Christian theological spirit as something "absurd." In its place, he placed his own notion of the function of *gi* from his own *gi* studies. He wanted to show that his *gi* studies can encompass the laws that move the natural world.

Although Choe Hangi accepted the precision of Western medicine and rejected traditional East Asia medicine's theories, he nevertheless believed that certain methods of Western medicine in curing the sick were still weak. There were not enough medications to treat sickness. Choe Hangi believed that studies on herbs, long carried out in the fields of Chinese and Korean medicine, could supplement such weakness in Western medicine. However, such herbs would nevertheless need to go through proper tests using Western scientific methods.

Although he advocated for the need for verification research on botany, he did not argue for anatomical research to gain medical knowledge of the body as much as Westerners did. In other words, it wasn't a field in which the Joseon Koreans needed to conduct research. As can be seen, Choe Hangi's interest in anatomy fundamentally differed from that of Japanese scholars of medicine.

## Epilogue

To summarize the landscape of the discussions on the body and its internal organs, it can be said that natural historical discussions were carried out using medical knowledge as the basis. In the field of traditional East Asian medicine, the system of knowledge centering around the Chinese discourses on the body and its organs were already well-established in the ancient periods. By the Song era, such knowledge was reaffirmed or partially revised through dissections. The Korean *Dongeui bogam* was a comprehensive review of all existing ancient knowledge of the body, captured within the framework of the Daoist view and treatments of the body. Furthermore, instead of producing new knowledge via actual acts of human dissection, *Dongeui bogam* already assumes the system of ancient Chinese medical texts to be true.

After the knowledge of Western medicine appeared as discourses in the late seventeenth century and later, tensions emerged between Western medicine and traditional East Asian medicine and Neo-Confucianism. While that conflict does not appear serious from a historical point of view, they were

nevertheless incompatible in terms of world view. The Western perspective, which saw the brain as the center of the body, posed a fundamental threat to the Neo-Confucian system of the body and knowledge, which views the heart as the center of the body. Galen's extensive scheme of explanation of the body using the liver, heart and brain as the center and introducing the notions of blood vessels, bones and nerves posed a serious threat to the conventional system of medical knowledge in traditional East Asia. Modern medicine imported later, rooted in even more advanced human dissections, experiments and observations, posed even a greater threat to convention.

How threatening the new knowledge based on anatomy was to the existing field of medicine can also be seen in the words of Nam Dumin, who was sent to Japan as a part of a Korean mission to Japan in 1763. Kitayama of Japan asked Nam about his opinion on human dissection using the example of human dissection by a Japanese practitioner of medicine. Nam Dumin displays his negative attitude towards dissection in response. (Kitayama 1764).

The conversation between the two men was quoted in the epigraph.

In above citation, Miwaki Toyo, the Japanese doctor mentioned in the conversation, produced a number of illustrations on the internal organs by dissecting tens of executed prisoners. He published the illustrations as part of the book *Records on the Internal Organs*. Miwaki Toyo's acts represent the first official dissection of human body in Edo Japan. A Western anatomical chart was imported to Japan via Dutch merchants even before this, and a Western book on anatomy had been translated into Japanese by 1774. Attempts to establish a new field of medicine using dissection formed a stream in the field of medicine in Japan. The topic of conversation between Nam Dumin and Kitayama was precisely on the issue of dissection in Japan. According to the example, Toyo, based on actual experiences of dissection, refutes the foundation of traditional East Asian medicine based on the five internal organs and six viscera by arguing that there were only nine organs in the body, not twelve (six internal organs and six viscera). As can be seen, knowledge of western medicine functioned in a way that posited the question of which system of medicine was right or wrong. The response of Nam Dumin, and the field of Joseon medicine, was overall rejection.

On this issue, Nam Dumin did not think highly of "attempts to establish a new field of medicine using dissection." Nam made it clear that in Joseon Korea, scholars follow the established principles of the emperor and his teacher Qi Bo and do not seek new theories in medicine. Furthermore, Nam disparages the Japanese efforts in dissection by claiming that "those who

learn through dissecting are fools and those who know without dissecting are sages."

The significance of Nam Dumin's remark that "those who know without dissecting are sages" (Kitayama 1764) can be seen in the *Ojuyeon munjang jeonsango* of Yi Gyugyeong (Yi Gyugyeong 1993:239a-240b). Yi Gyegyeong mentions a number of cases in which doctors identify and cure diseases by knowing the inside of a body without dissection. An ancient famous physician, Zhang Sangjun of the Ming drank the water of Pure Ponder and cured diseases by looking at the illustrations of the internal body organs. Yie Fa of the Tang located the disease inside of the body using an iron mirror and fixed the lump inside using medications. Furthermore, Yi Gyugyeong (1788-1856) argued that illustrations based on dissections were less precise than older works from the ancient times such as the *Myeongdang Naegyengdo* (Illustrations of the Inner Body). Yi Gyugyeong believed that the meridian system and acupuncture points of this illustration were mapped out, by the emperor, his official Qi Bo and his teacher Jiu Daiji, in the context of the body organs and the *yin-yang* scheme.

As the matter of *legitimacy* of the knowledge system of the body was at stake, introduction of Western medicine assumed a greater significance than a mere importing of a new system of knowledge. Traditional East Asian medicine also continued to reaffirm its legitimacy through human dissections, and had no serious challengers within its sphere. Western medicine, however, was far more exhaustive and presented a fundamental threat to the existing system. That trend became even more significant after the "opening" of the East Asian nations in the nineteenth century. The twentieth-century trend in East Asian medicine that emphasizes efficacy via empirical experiences or the mental side of medicine instead of dissection can be interpreted as a response to the abovementioned trends.

Such developments also appeared in the realm of ideas, as the Neo-Confucian perspective on the body was based on medical perception of the body. As the existing medical perception of the body changed, the position of the Neo-Confucian perception of the body also weakened.

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Shin, Dongwon (KAIST)

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**Shin Dongwon** teaches the history of Korean science and medicine at the School of Humanities and Social Sciences at KAIST (the Korea Advanced Institute of Science and Technology). He is interested in modernity and coloniality of Korean healthcare and the social history of Joseon medicine. His book publications include *Hanguk geundae bogeon euiryosa* (1997), *Hangwon ero irgneun dongeui bogam* (co-author, 1999), *Joseon saram eui saengro byeongsa* (1999), *Joseon saram heo jun* (2001), *Hanguk maeuihaksa* (2004), *Hoyeolja, joseon eul seubgyeok hada—mom gwa euihak eui hanguksa* (2004), and *Uri gwahak eui susukkekki* (2006, 2007).

## Abstract

I want to review discourses on late–Joseon-period illustrations of the body in this article. In the fields of Joseon medicine and natural history, anatomical knowledge functioned as the determinant of whether a medical perspective was right or wrong. While accepting such theories of Chinese medicine, *Dongeui bogam* also incorporated Taoist perceptions of the body, along with its emphasis on cultivation of energy, spirit and body. On the other hand, discussions in the natural history field were more active. Natural historians often questioned what practitioners of medicine took as given such as the connections between the five organs and the five elements, and the relationship between the five internal organs and five sensory organs. However, they did not think of anatomical research as something positive. Western discourses on the body, illustration and dissection, which markedly differed from the traditional perspective, entered Joseon Korea beginning in the late seventeenth century. Western medicine was supported by even more anatomical study, which presented a serious challenge to existing perspectives of the body. That challenge was also a challenge to the Neo-Confucian perception of the body, the dominant framework of thought in Joseon Korea.

**Keywords:** The body, dissection, anatomy, *Dongui bogam,* Western medicine, illustration

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