The Wisdom of Concreteness after the 12th of March

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Our environment changed after the 12th of March.[1] Radioactivity was bespattered in our nature, and the difficult-to-return zone appeared. Even today, the government advertises a "Nuclear Emergency Declaration." Thus, we came to exhibit doubt in science. Science is no longer an intended procreation of wisdom. Under the name of an industry-government-academia collaboration, science became a tool of the slaves to push capitalism. Only academic "performance" came to be important. In other words, only "useful" science became required.

For instance, a person who is an experimenter or a scientist is required to give a conclusion or evidence. Without assuming a rebuttable situation, or when floating a thought, due to the impatience of the ministry, universities, and laboratories, the experimenter-scientist tends to render "fast science (*science rapide*)." The wage workers are similarly pressed for time in the city in the same manner as if they worked in the fast food industry.

In this paper, relying on the discussion that Pasteur "discovered" lactic acid by Bruno Latour and Isabelle Stengers, I will consider the wisdom of another way of creating science. Latour and Stengers argued Pasteur's issue by taking account of the theoretical background of Whitehead's philosophy. We find in their discussion that knowledge is always entangled with other knowledge, and that knowledge knots power. Adding to these problems, broiling from Whitehead's philosophy is an ethical attitude of those who produce wisdom.

KNOWLEDGE OF CONCRESCENCE AND PROCESS

First, why discuss Pasteur? Dagognet says, "His [Pasteur's] work in science is not only to change the ties that have been established between the biological and chemical, but also to change the general representation of the biological world and some relations that are interwoven in the present and the allocation of roles in the various chemical actions that unfold on this earth" (Dagognet 1967: 67). Pasteur had not found lactic acid in just one person and only from the framework of biology. Rather, while the winemakers, livestock traders, and craftsman cooperated with various people by sharing knowledge and background, he discovered the biological works of a chemist in his laboratory. In our époque, we always hear studies under the name of an industry-government-academia collaboration with science. Pasteur's case is understandable for us; it is classical but contemporaneous. From these assumptions, Latour's work "will be used to imagine how Whitehead would have accounted for Pasteur's understanding of the discovery of lactic-acid fermentation in 1858" (Latour 1994: 197).

Latour used the metaphysics of Whitehead's work as follows: "In Whitehead's vocabulary, Pasteur's laboratory appears to us an occasion offered to trajectories of entities that inherit preceding circumstances by deciding to persevere in a new way of being" (Latour 1994: 205). According to Latour, Pasteur's experiments captured the existence of lactic

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acid, discovering it in the course of the experiments. Needless to say, this occasion did not discover one substance of the objectified static being. Rather, it discovered something in the dynamic becoming. Because of this, Latour took Whitehead's metaphysics in pursuit of process and reality. From here, Latour picked up from Pasteur's manuscripts and looked at the process that purifies the mystery of acid in the laboratory. First, Pasteur created whey and put phosphate in it, saturated or filtered the product, and further evaporated the various liquids. In picking up such a process, Latour mentioned the following: "acid is ultimately a procedure, a recipe, and is coextensive with a course of action" (Latour 1994: 206). Needless to say, it is the "trajectory" or "process" that is discussed by Whitehead. From this, Pasteur found the milk powder and a nitrogen-containing substance; it went into a container to separate it from casein. At this time, the mystery of the acid should not be of what "nevertheless plays the principal role" (Latour 1994: 206). For a series of Pasteur's experiments, Latour said the following: "in the laboratory, the body of Pasteur, careful and skilled, serves as the occasion, the circumstance, the concrescence of the enduring establishment of lactic fermentation" (Latour 1994: 207). In other words, it became one that contains Pasteur's subject and object of acid; they were living as one as an event or an occasion (concrescence), and these processes were part of the discovery. Thus, "if Pasteur hesitates the fermentation is also hesitating" (Latour 1994: 208). Latour described it as follows:

> Without presupposing an organism, Pasteur never could have reduced the long list of trials into a single yeast. According to historians of science since Duhem, one has in fact always needed a theory, a prejudice, a presupposition, a conceptual framework, a paradigm in order to organize data that one can never encounter face-to-face (Latour 1994: 210).

Latour argues when Pasteur experimented with lactic acid, or when he wrote a manuscript about lactic acid, he assumed the mystery of acid as a kind of (microscopic) organism. Pasteur experimented by framing mysterious acids or the substance as a kind of organism as well as Whitehead's framed organisms to all, whether they are biological or inanimate things. As a historian of science, Duhem already found that a similar method had been declared, as all experiments can be realized with theory in their background. For this experiment, the result was "conceptual reversion." Latour does not refer to Whitehead, but we can further describe it from Whitehead's perspective. In a series of experiments, it is clear that Pasteur made these various bacteria and acids for their "erodibility." However, that erodibility was converted in the way of "fermentation" ("conceptual conversion"). Therefore, the lactic acid changed its status so that it could serve various people such as winemakers, livestock traders, and craftsman. Also, at first, Pasteur understood the molecular level of an enzyme-substrate reaction as a "chemical reaction." Step-by-step, he revealed "biological reactions," in particular microorganisms, by trying to grasp them as a kind of organism (process and reality). Latour described a hybrid for the experiment of the scientist by superimposing its own actor-network-theory (ANT) and the model of Whitehead's philosophy.

TOWARD SLOW SCIENCE

Consider further little more about such a hybrid from a different angle. Stengers also took Pasteur's issue. Stengers argued for the emergence of knowledge based on the fact that Pasteur denied the "theory of spontaneous generation" (Stengers 1997: 33ff). Needless to say, this has been an abandoned theory that occurs from nothing to (micro) organisms. By using a flask tube, Pasteur indicated by experiments

that do not create microorganisms that they enter the air when boiled within the flask. These experiments used Pouchet's apparatus. Boiled dried grass was placed in some of the flasks with mercury and oxygen and naturally occurring microorganisms were observed. The results obtained here are quite simple. If there is a microorganism present, then more microorganisms may occur. In other words, nothing comes from nothing, and something from something. Through the basis of these findings, he expanded his discovery in not only chemistry but also the biology and medical arenas. According to Stengers, Pasteur attracted interest from "farmers, industrialists, sanitarians, functionaries in public health, and medical doctors" (Stengers 1997: 40). Stengers continues to write about why the doctors believer Pasteur. He invented a "serum" that allows for the treatment of infectious diseases. As is well known, when bitten by a snake, it serves to weaken the snake's venom, and it is an antibody. In fact, through the study of lactic acid and yeast, he obtained great support from beer manufacturers, wine manufacturers, and cheese producers, and by making the antibody, his discovery had a significant impact on medical matters.

Pasteur experiments with advanced hybrid processes. There is no purely good occasion or event. Stengers described it this way: "The scientist doesn't control the interests that will allow his creation to 'go out from the laboratory.' However, it is rare that those interests are not actively promoted by the scientist himself" (Stengers 1997: 47). In addition, Stengers notes that "there are creators who satisfy their proper creation," but "most of them (scientists) care about the legacy their creation could have, the way it could intervene in other fields or create new connections. If the sciences create indeed new objects, [...] we owe this to a kind of concern" (Stengers 1997: 47-48). To put it plainly, most of the scientists are worried about their own conduct. For such a purpose, scientists conduct experiments. Needless to say, in the present research environment, they should take funds from somewhere (competition) by which they may proceed with the research. To get some grants, they often require an impact factor. "The extent to achieve for what purpose." If there is no answer regarding utility, practicality, and global performance regarding this question, they will not get funding. To get some grants, for example, most of the molecular biologists would write something in their study about how the research would help the pharmaceutical industry's work regarding cancer. Is that statement true or false? If they do not write such a thing, they cannot carry out research, and this situation is widespread. At the same time, the higher the reliance on science and technology, the greater the level of distrust.[2]

Let us return to Stengers's work. As we saw above, she considered the following in a recent book, *Une Autre Science est Possible!* using Whitehead's theory (Stengers 2013: 96ff). It is relevant to note Whitehead quoted by Stengers, from the relevant sections of the book, *Science and the Modern World*:

> This situation has its dangers. It produces minds in a groove. Each profession makes progress, but it is progress in its own groove. Now to be mentally in a groove is to live in contemplating a given set of abstractions. The groove prevents straying across the country, and the abstraction abstracts from something to which no further attention is paid. But there is no groove of abstractions which is adequate for the comprehension of human life. Thus in the modern world, the celibacy of the medieval learned class has been replaced by a celibacy of the intellect which is divorced from the concrete contemplation of the complete facts. Of course, no one is merely a mathematician, or merely a lawyer. People have lives outside their professions or their businesses. But the point is

> the restraint of serious thought within a groove. The remainder of life is treated superficially, with the imperfect categories of thought derived from one profession (Whitehead 1967: 197; Stengers 2013: 96)

As Stengers also described, "it is a new collusion between profession and progress" (Stengers 2013: 96). Try to read the previous quotation. Whitehead analyzed it as follows (Whitehead 1967: 195ff): in the 19th century, the industrial and productive form had developed, investigating aesthetics had been discarded, art had been treated as child's play. The natural undulation of the Thames River, by Charing Cross, had been damaged in its aesthetic value.[3] Professions without performing a quest for aesthetics will accelerate their specialization of knowledge that fits into the groove. "The modern chemist is likely to be weak in zoology, weaker still in his general knowledge of the Elizabethan drama, and completely ignorant of the principle of rhythm in English versification" (Whitehead 1967: 196). Without the understanding of other areas, it is just the professions that know the "beneficial subject" in the eyes of a given area. This context led to the wording cited above; Whitehead said it is "dangerous," and Stengers referred to him. The more specialization advances, the faster their walking in the groove under the investigation of capital.

Dangle an enticing carrot in front of hungry scientists who cannot be careful. They are stuck in a groove of their own and do not ruminate their concrete occasions or events in their lives. Through rolling narrow abstract ideas, they proceed in their studies. This type of research is just a fast science as described by Stengers. However, according to Whitehead, "professionals are not new to the world. But in the past, professionals have formed unprogressive castes" (Whitehead 1967: 205). From Whitehead's point of view, Stengers writes, "the works of university that question the《slow science》connect here with the interrogation which haunts our époque" (Stengers 2013: 97). Stengers discusses not only the work of the university, but also the work of the research institutes or industrial researchers. Of all of the researchers attempting to raise the scientific results, she has been warned of knowledge modes.

For example, "medical progress"[4] is believed to spur longevity through advances in medicine. However, is this really so? It is believed that the mortality of tuberculosis causes swoop through streptomycin. However, is this really so? First of all, consider pre-war and post-war life in Japan. We have celebrated the longevity society, but it differs from nutritional status. Now there is no sinus congestion, not because of an antibiotic. Children have more energy due to changes in nutrition. There is increased diabetes and gout. The death rate from tuberculosis in Japan has decreased dramatically, and the death rate from that ailment has decreased worldwide as well. From only an understanding of the medical data, it got stuck in the groove. Are medical studies "strict" science (Kato 1986: 109ff)? Medicine in the books is classified as natural science in Japan and is not so considered in foreign countries. Medicine is not only science, but also a philosophical or political entity.

THE WISDOM OF CONCRETENESS

According to Stengers, critical abstract knowledge from a wide range of concrete areas is better than being bound only to the narrow knowledge that is stuck in the groove. From this standpoint, though Stengers criticizes the GMO (genetically modified organism), we will further consider what remains in Whitehead's discussion that Stengers picked up. Whitehead says the following:

> This criticism of modern life applies throughout,

> in whatever sense you construe the meaning of a community. It holds if you apply it to a nation, a city, a district, an institution, a family, or even to an individual. There is a development of particular abstractions, and a contraction of concrete appreciation. The whole is lost in one of its aspects. /……/ The point is that the discoveries of the nineteenth century were in the direction of professionalism, so that we are left with no expansion of wisdom and with greater need for it.
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> Wisdom is the fruit of balanced development. It is this balanced growth of individuality which should be the aim of education to secure. The most useful discoveries for the immediate future would concern the furtherance of this aim without detriment to the necessary intellectual professionalism (Whitehead 1967: 197-198).

For Whitehead, though the knowledge of abstract science is an object of criticism, it is not of course unnecessary. Rather, it is stated that to build up an abstract is rooted in the concreteness of Whitehead's "wisdom." Not only scientists, professors, nations, and research institutes pass the Charing Cross in the Thames River, but also those cities and provinces as objects of resilience and gentrification. These produce abstract ideas. Rather, according to Whitehead, to balance the concreteness, we criticize the abstract from the concrete point of view, and wisdom occurs. Of course, balanced development is not the resilience that is given by a public administrator or a social psychologist as a stamp of approval. Balanced development is a kind of attitude of parturient wisdom through autonomous voluntariness that tries to balance the abstract and the concrete. According to Whitehead, education makes it possible to shape wisdom.

In recent years, there have been arguments about "integrative science" and "trans-science" in scientific studies or the actual fields of the sciences (Nozawa 2013). As C. P. Snow found, there are still discussions about the "two cultures" problem. We sometimes hear that a science cafe is necessary to implement science literacy, which is for citizens' science education. Of course, I do not think that these events are now better. Stengers also, in the context of the previous GMO criticism, alludes to the science education participation that uses knowledge of science for non-scientists. It displays mediocrity. When we go to the (nuclear-plant) power museum, or when we obtain knowledge of the safety of nuclear power plants, then is it real and critical? In one science cafe in which one company participated, is there any lecturer who describes critical knowledge in breach of the company? As we well know, in recent years, even the university, in the name of industry-government-academia collaboration, creates patronized scholars. Does the trans-science function, which is suggested by liberal arts scholars to science scholars, have bearing? Will trans-science without being enclosed in a company act? Are we providing a high order of professionals to question other professionals, and furthermore high-order specialists to question other higher-order specialists…. Is it possible to execute Plato's philosopher-king in politics? From a professional standpoint, the amateur's thought is always derided. Technological fascism is likely to occur. Amateur judgment is often prone to scientific falsity. Technology populism is likely to occur.[5]

Moving back to Whitehead, he puts forth a specific education plan. Of course, he said, "There is no easy single solution for the practical difficulties of education" (Whitehead 1967: 198-199). This is predicated on the notion that "the student should concentrate within a limited field" and "I should be inclined even to increase the facilities for concentration rather than to diminish them" (Whitehead 1967: 199). This is part of professional education itself. Whitehead discusses the other side

as well:

> The centre of gravity of the other side of training should lie in intuition without an analytical divorce from the total environment. Its object is immediate apprehension with the minimum of eviscerating analysis. The type of generality, which above all is wanted, is the appreciation of a variety of value. I mean aesthetic growth. There is something between the gross specialised values of the mere practical man, and the thin specialised values of the mere scholar. Both types have missed something; and if you add together the two sets of values, you do not obtain the missing elements. What is wanted is an appreciation of the infinite variety of vivid values achieved by an organism in its proper environment. When you understand all about the sun and all about the atmosphere and all about the rotation of the earth you may still miss the radiance of the sunset. There is no substitute for the direct perception of the concrete achievement of a thing in its actuality. We want concrete fact with a high light thrown on what is relevant to its preciousness (Whitehead 1967: 199).

This is Whitehead's educational point of view regarding abstract knowledge and the expert perspective; it has to acquire the wisdom of immediate experience, which gives it concreteness. It is a teaching of wisdom of acquisition rather than education. In this, he argues for the acquisition of wisdom by honing aesthetic sensibility. By having a sharp perspective, it attracts the context of Whitehead's philosophy itself through intuition and prehension, so wisdom is obtained. Of course, it is important to not only acquire both routine understanding and scientific understanding, but also to sew up both and prehend them through concrete intuition. We act only as intellectuals, and only as masses. Rather, the life and science of the intellectuals and the masses is a critical subject; it is required in the fundamental concreteness, which can re-acquire them. Therefore, it is a complete loss of science and life; the class that can require itself only by a complete re-acquisition of science and life sought education from the perspective of Whitehead's philosophy. This can be determined in science and life, and seeks wisdom. Instead of pandering to the masses and surrendering our life to abstract science, we desire concrete facts. This is made from the perspective of not a scientist, techno-fascist, living person, or techno-populist. Science is extremely important. Life is extremely important. It is not deadwood. So it should find distrust only in life and science.

To draw a trajectory that is relied on with concreteness rather than to fit into the groove with a narrow abstract knowledge, instead of being bound to the knowledge of one person alone, it can lead to consequences for the cooperative. It criticized the abstract knowledge that devises wisdom. Those who are rooted in concrete life can find wisdom.

Notes

1 Shiro Yabu made a distinction between the 11th of March, which saw the earthquake and the tsunami, and the 12th of March, which saw the initial response to the damage of the Fukushima I Nuclear Power Plant. For example, see Yabu (2012).

2 For example, Kawamura describes the context of Latour's theory as follows:

> …it is questioned fundamentally to change attitudes regarding science and technology. People were forced to suddenly reserve trust in modern science. Certainly, science provides useful products and services, giving us a rich life. However, at the same time, it also created a huge risk that could shake our day-to-day lives and cause us to fall into a non-governing state of humans who have lived as part of nature. However, knowing that it has spread fear of the risk of science

and technology, experts in those fields still try to deal with conventional techniques even for newly occurring risks. They are trying to control risk technically. Or, they intend to solve the problem by teaching people without being able to understand the fear that people feel. However, there is suspicion of us filling the mode of production itself, which directly connects science-technology and industry rather than obtaining data on the theory and experimental fields. It refers to "what is technically controlled" or "what we think about problems technically." It occurs as a difference between the experts and the general public, and it increases distrust of experts in science and technology (Kawamura 2008: 260-261).

3 As recalled here with us, there is a problem in the new National Stadium construction for the folly of the Tokyo Olympic Games to be held in 2020.

4 See Kato (1986), p. 137ff. He describes it as follows:

> I asked Airou Kawakita, who is an authority on the history of medicine, the following: "Though human beings have been victorious against the Bucillus disease after the idea of pathogens were established, Salmonella typhi was found, Vibrio cholerae was found, Tuberculosis was found, but until the pathogen is found, has medicine in terms of treatment efficiency seen progress?" Kawakita answered, "I do not know" and further said, "Treatment efficiency would not likely have improved."
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> I asked him whether it was progress, and he immediately said, "The description of pathology has accumulated. It is the same basis from the Greek era. It is surely progress."
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> In short, considering the history of treatment efficiency of medicine against the disease, until 1892 it was not nearly more efficient, and it suddenly rose in 1892 (the discovery of pathogens → establishment of Public Health). Thus, in May 1890, the World Health Organization (WHO) issued a smallpox eradication declaration. Mankind followed the history of the victory of pathogen eradication. Although I think that the illness will be extinct, it was irrelevant.
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> However, knowledge was gained on the causative bacteria of exogenous disease, and it was completely untouched for lifestyle-related diseases and genetic diseases. In addition, it was defenseless against the virus. Rather, modern lifestyle-related diseases have become major targets of medical practice. In the 1990s, scientists finally began treating genetic diseases (Kato 2011: 83-84).

5 Regarding the terms "techno-fascism" or "techno-populism," see Kato (2011), p. 168.

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