

Multiple Discourse on Monozukuri as a Keyhole to View Modern Japan

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In the last 30 years, in Japan, a fair number of books have been published with the term “monozukuri” in the title. Established in 2013, the library at Monotsukuri University has at least 220 books with the term “monozukuri” in the title. Many such books were published between the early 1990s and until 2010. In Japan, monozukuri is a term that is frequently heard in everyday conversation and in mass media. The term is a popular word, and has also been promoted by edicts issued periodically by the Japanese government, such as the Monozukuri Kihonho, or the Basic Act of the Promotion of Core Manufacturing Technology. In 2005, the Japanese government awarded its first Award of Monozukuri Japan, which prompted local governments to issue similar awards, such as Osaka’s Monozukuri Company Award. Mass media also willingly uses the term. For instance, Nikkei, the largest business newspaper company in Japan, started a monthly magazine named “Nikkei Monozukuri” in April 2004, a renewal of an old biweekly magazine named “Nikkei Mekanikaru” originally started in 1977. The term has even taken hold in the academic world. As mentioned earlier, the term became a university’s name,

Monotsukuri University. In 2008, Tokyo University established Monozukuri Keiei Kenkyu Center, or the Manufacturing Management Research Center, to foster international and industry-university cooperation.

Although monozukuri has been heavily used in the last 20 years, serious research has not been conducted regarding its meaning and connotation as the term is self-explanatory to any Japanese person. However, I came to believe that monozukuri was a key term through which others can view modern Japan.

First, lexicologically, monozukuri is composed of two words: mono, something tangible, and zukuri, making something from a different thing. In the written form, no Chinese characters are used, but only hirakana or katakana. It is notable that both mono and zukuri are originally Japanese words, or wago. The term implies making things in purely Japanese ways. For example, on Toyota's homepage, Toyota's conventionally-named manufacturing system has been named Toyota Seisan Houshiki, in which both seisan and houshiki are Chinese characters. However, the phrase, "Toyota Monozukuri no Gurobaruka" or "the globalization of Toyota monozukuri," can be seen as well. Monozukuri is an all-inclusive term that can refer to a range of concepts, from children's toy-making to traditional crafts to the creation of advanced machinery. It can be used to describe the act of creation by any Japanese, regardless of generation or era of Japanese history. The emerging use of the term indicates a trend toward "nationalism" in Japanese culture as well as industry.

One way to explain the sudden emergence and use of this term is to study the "lost" two decades after the early 1990s, in which very little economic growth was recorded, large companies collapsed, the unemployment rate soared, and the gap between the newly rich and the poor widened. As a result, many Japanese lost confidence in their country, in which a conventional style of work could no longer sustain its citizens.

The term "monozukuri" emerged to counter an image of

Japan in decline. This nationalistic campaign probably started with the government, and subsequently spread to mass media and industry. Monozukuri proved to be a powerful and symbolic term appealing to all generations of the Japanese people. Over the last twenty years, many Japanese have come to associate monozukuri with a wide variety of meanings. The range of meanings is so diverse that I want to marshal them into some categories of different but interrelated discourse.

The first discourse: a historical discourse

The first discourse is what I call a “historical discourse.” In other words, Japan has a long tradition of great monozukuri even before the modernization or westernization of Japan. Only recently, the industrial revolution heritage of Meiji Japan was registered as a World Heritage of Culture by UNESCO. A Japanese newspaper stated that this registration was the official recognition that those industrial heritages were the symbol of “the beginning of the nation of monozukuri.” Or rather, Meiji restoration marked the beginning of modern Japan as a great nation of monozukuri.

However, the Edo period from the 17th through 19th centuries can also be noted as the beginning of modern Japanese monozukuri. According to this discourse, the road toward a technological empire began with the Edo era in Japan.

One such example to support this statement is that Japan’s largest gold mine was located on Sado Island. A tunnel for the mine, about one kilometer long, was made at the turn of the 18th century. The technique employed to mine this tunnel was known as the multiple drifting method, digging from both sides of the tunnel. The error at the joint was as little as a dozen centimeters. At the time, Japan was a world leader in tunnel construction. Even today, Japan is noted for the most advanced tunnel drivage technique. As a proof, it is known that when the Channel Tunnel in Europe was built from 1986 to 1990, four out of the eleven tunnel

boring machines used were from Japan.

Above all, the most outstanding invention indicating superior technology developed in Edo era Japan is the Japanese clock, or Man-nen dokei, made in 1851 by Hisashige Tanaka, a master creator of a type of mechanical doll, known as *karakuri ningyo*. The clock combined the advanced and innovative technology of Japan with western technology.

Mannen-dokei 1851

The dome-shaped top part of the clock is a planetarium in which both the sun and the moon use rich knowledge of astronomy to move precisely along the orbit observed from the city of Kyoto.

The middle part of the clock is composed of six different clocks, one of which is the western clock based on the fixed time method. Another is a Japanese traditional clock based on infinite time, in which time is measured by equally dividing day and night determined by the times at which dawn and sunset occur. Making



Fig. Mannen-dokei (The Eternal Clock)

a clock based on the Japanese way of measuring time was complex and difficult. The clock was made to work based on the time in Kyoto, Japan.

Lunar phases are also precisely shown in one of the six clocks.

What is most remarkable is the bottom part of the clock, which contains a high-tech spring. Once wound, the spring moves for 230 days without rewinding.

In 2004, 100 leading technical specialists from various areas of expertise were called together to form a team to reveal the clock's entire system. It took them five months to reveal all the mechanisms, but it took Tanaka less than two years to complete its assembly with only a thousand parts.

In Japan it has been asserted that the industrial revolution of Japan did not suddenly occur in the Meiji era, but western science and technology were "grafted" onto traditional Japanese knowledge and technology. This claim seems to be widely accepted in Japan, although more detailed historical scrutiny is required.

Some Japanese claim that the basic nature of monozukuri is the same, whether in the present or in the past. In the post-World War II period, it was the precision metal mold that made Japan a leading industrial nation. Professor Etujiro Yokota, a leading specialist of metal molds in Japan, claims that making a metal mold is the basis of all kinds of monozukuri. He further says in an interview with me that even in the age of mass production now, monozukuri is to make just one metal mold precisely and neatly by hand, as the mold copies an infinite number of the same shape of a product. Hence, "mono" in the word of monozukuri may also mean ONE, just like the English word. Monozukuri may mean to make a thing one by one, just as it was done before the age of mass-production. If so, according to the discourse, the Japanese have been good at making a thing diligently by hand since long before the modernization of Japan. Thus, there is continuity between pre-modern and modern Japan as far as monozukuri is

concerned.

“The battle over one one-thousandths mm thick difference” was a legendary NHK television documentary broadcast on September 7th, 1998. The program showed that skilled technicians in Japan could sense a thousandth millimeter difference by finger touch, and focused particularly on a young, unknown technician, Shun’ichi Tanoue, who won the gold medal in a world skills competition held in Switzerland in 1997. He was the only person among the competitors from all over the world who noticed a design error in the assignment, which astounded the judges. The TV program audience most likely believed, and continue to believe, in the feat of the Japanese craftsman.

These episodes seem to indicate that the Japanese use the term *monozukuri* to assume the use of hands and fingers, and not a machine, as instruments of creation.

The second discourse: a religious discourse

The second discourse, related to the first one, refers to a long-lasting traditional or religious value in Japan, which theorizes that a spirit or soul resides in everything tangible, and so making a thing is a sacred act of putting a new soul in it.

Kenji Ekuan (1929-2015), a pioneering industrial designer of Japan, is one of these theorists. Ekuan asserted that things could be objects of faith in Japan, as gods and spirits are believed to reside in them. Japanese have believed that foreign gods may reside even in imported foreign products. Making a thing, or working, is in itself a sacred life, and just like a human, a thing has a personality. That is why in Japan, the term industry was named *sangyo*, or a work of giving birth, because things are considered to be living creatures. For the Japanese, it is more important to see that a born product is loved and used fully with dignity rather than just whether it is selling well. Memorial services have been held to honor used needles, mirrors, scissors, and so on. In modern day

Japan, a large high-tech company holds a memorial services for its defective semiconductor chips.

A thing is supposed to be made with dignity to have a good personality, so that the personality of the user of the thing may be also improved. Things can have life when fully used, as they are born as such.

Therefore, Ekuan calls the Japanese 物教徒, *bukkyoto*, not to mean Buddhist (仏教徒), as they have a sincere faith in things loaded with spiritual beings. He claims that this Japanese faith originates longbefore Buddhism and Confucianism came to Japan.

The third discourse: “monozukuri is hitozukuri”

The third discourse is a peculiar discourse, “Monozukuri is hitozukuri, or human-making”.

Tomohiro Koseki, a writer and a skilled mechanic, claims that even in this modern high-tech age it is not the machine that makes a thing, but it is the human that makes a thing with a machine. In all ages, the human is the subject who makes a thing using machines as a tool. That is why there is a joy of making things. Monozukuri, for him, means a source of joy, but not a source of suffering.

This discourse that monozukuri must go with hitozukuri can be found far before World War II, however, this statement can also be seen widely today in Japan, even though the nuance of hitozukuri has changed to a significant extent.

The first person who expressed the inseparable association between a product and the worker is Tsurukichi Hatano (1858-1918), the founder of GUNZE Corporation, which was established in rural northern Kyoto in the early 20th century. He said that a “good” person makes a “good” product. Hatano developed the company to be the top Japanese maker and exporter of silk. Hatano said:

If the heart is pure, shiny silk can be made.

If the heart is far from negligence, cutting never appears in silk string.

If there is nothing to be ashamed of at heart, a strong silk string can be made.

A good person makes a good silk, and a trusted person makes a trustworthy silk.

These statements indicate that for Hatano, hitozukuri referred not just to skill development, but more importantly, to the development of each worker's personality and their mental attitude during working hours. Being a Christian, Hatano was impressed by the word of Jesus introduced in Matthew 7:15-20, "a good tree bears a good fruit." He believed that by holistically developing the personality of the worker as well as their skills, high quality silk could be constantly produced in his company.

Another notable and influential industrial figure to be mentioned is Konosuke Matsushita (1894-1989), the founder of Panasonic, who has long been widely known as a "god of management," even a quarter century after his death. He published a number of books in his lifetime, which sold over 20 million copies. The most popular one is titled, "Michi wo Hiraku," which alone has sold over 5 million copies and is still selling today. In his publications, Matsushita claimed that hitozukuri comes before monozukuri.

Compared with "Hatano of Gunze" as shown before, Matsushita felt that developing each worker's personality was beyond the ability of a company alone. Personality development, he claimed, is to be conducted in one's family life and school life, as well as their life in the workplace. However, he did not intend to make workers loyal to the company. Rather, what he tried hard to do was to get the best out of each worker for the person himself, for the company, and for society in general.

According to management history studies in Japan,

Matsushita was the first and only industrialist before World War II who openly claimed that the mission of industrialists and the company was to eradicate poverty by employing as many people as possible, providing inexpensive goods affordable even for the poor, and paying taxes to enrich the nation. Doing so would also help the poor people make a living by themselves. This may sound a naïve ideology, but it made great sense among industrialists, even in the early post-war period when so many Japanese people were suffering from poverty.

By presenting the mission statement, Matsushita succeeded in creating an ideological cosmos in which work is not just a means to make one's living, but it is simultaneously an act to improve society in general. Developing skills as a worker and planning to make better products for the welfare of consumers are the ways toward the company's mission. In short, in the case of Konosuke Matsushita, the concept of hitozukuri suggests that regardless of work or daily life, individuals of all kinds should work and live for the betterment of society in general as well as seeking one's own happiness.

These two examples may be too idealistic. In the 21st century, hitozukuri seems to refer more concretely to a worker's skill development. However, an often-heard statement such as "growth as a person by way of work is important" seems to imply that a truly good worker is supposed to also be a person with a respectable personality.

With regard to the concept of hitozukuri, some theorists point out that there is a set of processes known as shu-ha-ri, which has been widely practiced for centuries in Japan. These processes involve all kinds of skills development, whether in the field of martial arts, traditional music and play such as Noh, religious training, traditional lessons such as tea ceremony and flower arrangement, and even to the modern workplace. The concepts of shu-ha-ri refer to three stages of learning mastery: the fundamentals, breaking with tradition, and imparting traditional

wisdom. The archetype of these thoughts is believed to have been born in the 14th century, at the advent of the Noh play.

According to Ryozo Fujiwara, a leading author of the thoughts of shu-ha-ri, it is a set of very complex thoughts, so that it is not easy to understand. However, to simplify, in order to develop skills of any sort, first, one should single-mindedly do just as advised or directed, putting aside his or her former knowledge and experience. This is the first phase of shu, or observation. Second, once the fundamentals have been mastered, he or she can modify the fundamentals as seen fit for better performance. This is the second phase of ha, or breaking. And finally, after having gone through the first two stages, he or she can fully master an extremely high level of skills in the final phase of ri, or departing. The person of this final stage is often called a meijin, or a master. However, Fujiwara says, in such traditional arts as martial, religious, and cultural arts, very few people reach the final phase.

Akira Yuasa, a Japanese fencing specialist, illustrates the process of development along the shu-ha-ri principles. A minor shu-ha-ri takes place in day-to-day practice in a spiral form, but the road toward mastery is so long that even lifetime practice does not necessarily take him or her to a stage of perfection. However, through this process, one can develop one's personality as well as and/or through skills.

Thus, hitozukuri as relative to monozukuri has been stressed in Japan. It may be because, as is often pointed out, Japan is short of natural resources, and the human is the only natural resource.

Despite the concept that human workers are Japan's only natural resource and should be treasured, Japan is also known as the nation of karoushi, or death by overwork. Statistics show that even suicide from overwork is increasing these days. However, a different perspective is that because human beings are the country's only resource, workers may be overloaded.

Statistics also show that many Japanese are not happy about their work.

Aren't monozukuri and hitozukuri making Japanese workers happy? A Japanese salaryman once confided that when he had worked for a company as a high ranking manager, he had sent and received hundreds of nengajo, or New Year cards, but at the first New Year after retirement, he received only six cards! At his workplace, he had probably practiced monozukuri, or made things or services very well, and he also practiced hitozukuri, or developed human resources properly, but he failed to make friends, or tomodachi-zukuri. Or, seen from a different perspective, he had as many as six true friends.

The fourth discourse: a discourse from overseas

During my search for the meanings of monozukuri, I received an unusual proposal from overseas.

The proposal was from a leading Indonesian industrialist who had many years' experience doing business with Japanese corporations. He said that the work values of the Japanese made Japan one of the most economically successful countries in the world. However, as he came to learn more about Japanese work values he found that they were similar to the teachings of Islam.

Rather than praising Japan, he wanted Indonesian workers and industrialists to be aware that their Islamic-based work values are as good as those of Japan. He believed that if Indonesian workers and industrialists truly live up to the teachings of Islam, Indonesia will pave the way for significant economic development as Japan did in the post-war period.

The content of the proposed project is to make a textbook for Indonesians to learn that Japanese and Islamic work values have much in common. My expected role, which I am currently working on, is to provide information on Japanese work values.

After I joined his small project team last year (2014), this industrialist became the Minister of Commerce of Indonesia. As a part of this project, I had an opportunity to meet and talk with

an Indonesian manager working for a Japanese corporation in Jakarta. He said that Japan was a respectable nation, but as far as he knew, many Japanese were workaholics. They work so hard that they even sacrifice their family life. He questioned, "Working so hard for whom?"

I was also informed about a conversation between a Japanese expatriate in Jakarta and a local Indonesian man. The Indonesian man asked the Japanese expatriate why he worked so hard. The Japanese man answered that he had a responsibility, and he wanted money to live well. The Indonesian asked how the Japanese wanted to spend that money he earned. The Japanese answered that he sometimes wanted to take a vacation, go to a beach, and relax, sleeping under a coconut tree all day. Then the Indonesian said, "That is fine, but that's exactly what I am doing every day."

I increasingly wonder on the optimal structure for putting together the Indonesian industrialist's proposed project.

Concluding remarks

In this short essay, I introduced several discourses on *monozukuri* observed in Japan. There might be more depending upon how we analyze the term. The search for the meanings of this simple term seems to reveal multiple facets of modern Japanese society, such as economy, industry, work values, "ideal" personality, and so on as well as how the Japanese look at themselves and their society in the globalizing environment.

Although, in this essay, the term *monozukuri* indicates making something tangible, it seems that the meanings of the term is also applied to making something intangible such as services of any sort, i.e. work in general. For example, the concept of Toyota Seisan Hoshiki has been applied to the workplace of banks and other service oriented offices since many years ago. This is a wider area that I hope to explore further.