



Discussion on the Future of the Abe Economy: Will there be a Knowledge Industrial Revolution?

— In-depth discussion on innovations and the future of Japan

Discussion between NONAKA Ikujiro and ASAHIOKA Eishun



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Data unleashing human potential

Nonaka Ikujiro: The biggest topic for the Japanese industries this year is the conversion of knowledge into data. For example, behavioral patterns of customers, which were not visible in the past, are made available for analysis and reflected to corporate strategies utilizing so-called “big data” (large volume digital data). Another example is Google’s development of self-driving cars, as well as the acquisition of several robot-related companies at the end of last year; these are also the efforts to convert as much knowledge as possible into the form of data. In this context, it seems the role of knowledge in society is facing a major change.

Asahioka Eishun: As a representative of a private sector think tank, I have been conducting research



on “knowledge society” and “social infrastructure.” In 1983 when I was working for Toshiba, I engaged in the formulation of long-term strategies towards the year 2000 (Project 21) and made a vision that society will evolve from an industrial society, an information society, and then to an “intelligent” information society. In Japan, as represented by the term “knowledge-value society” advocated by Mr. Sakaiya Taichi, the importance of knowledge in society has been discussed for some time. During the past one to two years, that concept has become an actual momentum and I think we are reaching a major turning point toward, so to speak, a “Knowledge Industrial Revolution.”

There were three stages before the arrival of the knowledge society. In the first stage, massive information was brought into society by the speed of the Internet. In the second stage, massive information was processed at a high speed and was accumulated into databases. In the third stage, accumulated information was used for management in making decisions.

In addition, as it stands now, the fusion of information-communication technology (ICT) with hardware has happened as seen in the Internet of Things (IoT) (connecting various goods existing in the world, as well as information-communication equipment, with the Internet). Thanks to the development of sensors, global positioning systems (GPS) and algorithms which are applied in unknown areas, such as physical property, movements of various phenomena and brain function, we have become able to acquire new knowledge by detecting, accumulating, transmitting at high speed and analyzing all of the above. Not only have General Electric (GE) and Google done this, but also social infrastructure companies as well, such as Hitachi and Toshiba, are entering this new stage of the knowledge industry.

Nonaka: On the medical front, for example, a method to restore ability to communicate is being sought to support people who have become unable to express their intention due to dementia, etc., by reading their brain waves. There is a possibility that we could understand not only the meaning that comes to the surface as words, but also the context behind them, if we can make good use of ICT. In this sense, with the use of ICT, it is possible to expand the human potential.

Asahioka: The same is true of nursing care robots. As needs for nursing care services are rising in the aging society, systems that support services are starting to be developed. In addition, technologies such as virtual reality and augmented reality (AR) will not only help the movement of people, but also expand human potential capability by breaking the limits of time and space. We are now at a stage to think about which direction we should take to expand human richness with knowledge information.

Nonaka: I have been pointing out that there are two types of knowledge embedded in business organizations. One is the “explicit knowledge” that can be clearly specified by a manual or data. The other is the “tacit knowledge” such as intangible know-how. For a company to sustain sound growth, it is essential to spiral up the conversion process between these two types of knowledge.

Mr. Wada Akiyoshi, professor emeritus at the University of Tokyo, says, “over the course of human history, mankind has been receiving various kinds of tacit knowledge from nature and the universe and strenuously translating it into explicit knowledge – knowledge that can be shared and used. And ceaseless efforts are still continuing for further value creation” (*Nikkei sangyo shimbun* on December 13, 2013). I think his statement has a good point. Compared with the explicit knowledge that can be express in words, it is difficult to improve the quality of the tacit knowledge. This is because we have to take into account not



only the words that come to the surface, but also the context behind them. Through the development of ICT, we might say that it has become easier to express tacit knowledge.

Asahioka: On the other hand, some people criticize that an information-oriented society and a knowledge society will lead to a controlled society. There is also a possibility that personal information could be controlled more than ever by the government and companies because of the development of big data. The development of monitoring cameras is one example. We could also note to the contrary that the free selection of merchandise could be hindered by the development of recommended technology for mail-order websites. However, we cannot change the reality that we have to face knowledge information that has emerged in a vast amount. For this reason, we should direct our attention to the positive aspect of “unleashing our potential” in the future knowledge society.

Nonaka: Yet, what I want to emphasize here is that no matter how deeply we analyze information and data, the concept of “good” that is rooted in an individual’s belief will not emerge. Leaders today have to pursue the “common good,” that is “what is good for society.” We cannot derive the common good using logic and analysis. Leaders need to recognize intuitively “what is good” in their own particular reality, articulate and connect them, and present to the world as a meaningful story or narrative. That is to say, leaders need to convert knowledge into a meaningful form for the people.

Asahioka: In other words, it will be necessary to show the direction of the future from a philosophical perspective; how to revive people with knowledge and data and eventually, how do we exist. In the past corporate society, if we said that we need philosophy to do our job, they would give us an odd look. This is because the logic of the corporate society and that of the academic world were divided. So, postwar Japan had the illusion that if the economy developed, its culture, its leadership, and everything would become better and richer. But now, business management without philosophy has begun hitting the wall. I think that the reason why Japanese consumer electronics companies lost to Apple is that Japanese managers did not have a philosophy like Steve Jobs of “changing future lifestyles.” In the knowledge society, it is necessary to think about the state, society, companies and individuals in a more connected fashion than ever before, and what is required in this regard is intelligence such as that coming from literature, history, arts and philosophy.

Nonaka: I agree. What the future leaders will need is precisely liberal arts. The objective of companies is not limited to making a profit. It also includes realizing a society that is comfortable to live in by pursuing the common good through their business operations. If this is the case, what is required is the arts that are specific and individual, rather than the science that is general and universe. We needed the ability of historical imagination that amplifies what a business leader intuitively knows from his or her reality as a mission of the company by extending the time and space nexus into the past, the present and the future.

The spirit of the “small self” has prospered in Japan

Nonaka: Comparing the leadership training in the West and in the East, explicit knowledge is given priority in the West, while tacit knowledge is emphasized in the East. For example, in his article in the



Harvard Business Review, Michael D. Watkins (a professor at Harvard University), listed seven challenges including shifts “from specialist to generalist” and “from analyst to integrator” as the conditions to become a business leader. What is common to all the seven challenges is that he sees people as a “function” for the prosperity of an organization. This is why a leader who is able to tackle the cost-cutting of personnel expenses is regarded as a good leader in Western companies, like in the case of GE and IBM in the past.

However, a challenge we should really address is how to enrich human existence further. In Japan, strength rests with human nature. Kobayashi Hideo, a critic, and Oka Kiyoshi, a mathematician, pointed out in their dialogue (*Ningen no kensetsu (Human Construction)* (Shincho Bunko), that the Japanese have the spirit of the “small self”: that an individual’s own body exists for humanity as a whole. Although it is undeniable that this spirit was embodied in a tragic form in the Kamikaze Tokko Tai, if we put it in another way, leaders and frontline employees tend to have a spirit of self-sacrifice for the public, without becoming too obsessed with their own self. This is the “samurai spirit” that has brought prosperity to Japanese companies.

Asahioka: Particularly such a culture flourished in the frontline of manufacturing industry that led the postwar economic growth of Japan,

Nonaka: Yes. It was demobilized veteran engineers who supported the frontline at companies like Honda and Matsushita Electric, for example. They always thought about what kind of world they would create with their products by connecting engineering with the society. In such companies, the top management like Honda Soichiro and Matsushita Konosuke acknowledged diverse values, and individual engineers worked munificently. It was exactly like the teamwork in action of an ambitious domain head and low-ranking samurais at the time of the Meiji Restoration. However, today, many large companies lack such people with a vision. They know what they want to do, but they don’t know why they’re doing what they are doing.

Asahioka: Today’s Japanese manufacturers cling to the buildup of technologies. They are mired in the idea that if they build up technologies, something usable may come out. What they should do essentially is to visualize the future, making full use of their imagination in their daily trials and errors and to materialize the process up to that point. Unless they do so, neither a new business model nor innovations will emerge.

Should the sense of crisis regarding war be utilized for technological development?

Nonaka: Japanese manufacturers also face the problem of overreacting. They give first priority to adherence to planning and compliance, and thus lose sight of their original purpose.

If I may add, what Japanese today have lost is a sense of crisis of whether to take an opponent’s life or the opponent takes your life, which samurais used to have. Although Nitobe Inazo, the author of *Bushido: The Soul of Japan*, is known as a pacifist, he never opposed war completely and said that if you draw a sword, you have to win by all means. John Ruskin, an English thinker, also said that a country would flourish by war and fall by peace. A war inspires a sense of crisis and strengthens a state as a result.



In summer of 2013, I had a dialogue with Professor Dr. Martin Levi van Creveld, a historian, about the “culture of war.” In a war, all human behaviors, including business management, are condensed. The essence of the dialogue was that although Japan has made it taboo to talk about wars thus far, there are a lot of things to learn from wars when thinking about the future development of companies. If you cling to plans and rules made beforehand, you will end up dying in a war. The same is true of competition among companies.

Asahioka: It is exactly on the actual site of developing new products and technologies that we have to make use of the aspirations for social values. What matters is how widely and deeply we will think to have insight into the meaning of the own project and whether we can risk our life with a great ambition. Such an attitudes are required.

Nonaka: An innovation can be achieved only if an ambitious top management and practical project members get together and work to achieve that innovation at their own peril. Toyota pursues better cars by putting together all its efforts as an organization, and Hitachi promotes a social innovation business that combines infrastructure technologies with advanced IT incorporating their pioneering spirit of founding philosophy. As indicated by the attitude of Mr. Yanai Tadashi of UNIQLO who is recruiting global-minded capable staff by setting a slogan of “changing clothes, changing conventional wisdom, changing the world,” vibrant companies are equipped with exactly these elements.

Asahioka: Mr. Son Masayoshi of Softbank and Mr. Mikitani Hiroshi of Rakuten also have such an aspiration beyond analytic theory.

Nonaka: As of this moment, there is no such a thing as a perfect theory. To create the future in this environment, a vision and a belief are necessary after all. If you keep expressing your vision and belief in words, they will turn into the power of words and be internalized into the members of your organization. In the dialogue I mentioned earlier between Kobayashi and Oka, Oka proclaimed that the essence of education lay in reading without comprehending; that is, having students read the *Analects of Confucius* single-mindedly even without understanding the meaning. If the *Analects* are hammered into the students this way, they will understand its essence at some point in time in their growth process and have an “Aha!” moment, said Oka. Words will not lead to actions unless they are internalized. Mr. Yanai also keeps expressing everyday the visions flowing from his own experience. This is nothing less than an attempt to have his own tacit knowledge shared throughout the organization.

Asahioka: A vision does not arise from the buildup of knowledge. It is an inspiration flash like intuitions from experiences accumulated in the individual top management. If people around him ask him what is the measure to achieve or what to do with the budget, etc., at that time, the breakthrough-vision will gradually be lowered. Then, human potential will cease. The larger the gap between the target and the present situation is, the greater our ability to focus our attention will be. The more information we will gather, the better encounter we will have. As such, lowering the target will work only negatively in terms of developing human ability. The reason why companies are so active in Silicon Valley is that there are many successful people around, and those people frequently engage in conversations about their vision



and target. We also have to create such an environment in Japan.

How to bring out the chaos of knowledge

Nonaka: If I may add further, to create innovations in an organization, it is essential to have not only an analysis, but also the “rhetoric.” There are three approaches. The first is to use a metaphor; that is, to express the characteristic of something in terms of another similar thing, as when we say “Time is money.” This is a horizontal linkage, so to speak. The second approach is a synecdoche; that is, to indicate the essence of something by presenting a part as the whole, as when we say “flowers” meaning “cherry blossoms.” This is a vertical linkage. The last one is a metonymy; that is, to replace something with some other thing with which it has a close connection, as when we say “blue eyes” meaning “westerner.” This is a diagonal linkage. To conduct engineering in an organization, it is critical whether such a methodology of knowledge can be shared or not. In this respect, I think that Japanese society, which does not place too much emphasis on individuals, is strong.

Asahioka: A metaphor is one of basic processes to create a new industry. Some argue that because as Japanese are not good at connecting one thing with another and are better suited for making single items, we may fall to become a mere subcontractor to the world. However, as you pointed out, I think that the Japanese are perhaps rather skilled at creating a new knowledge-based industry if we make full use of our characteristics, our dignity and the artisanship we essentially have. Historically we have been developing our own culture by learning from the continent, all we have to do is to call on creative experts from abroad if we are poor in the knowledge of networks, algorithms and the software industry. Japanese have the flexibility and diversity to learn from them.

Nonaka: In that regard, a case study about Kodak and Fuji Film, their reaction when the sales of their mainstream film product declined drastically due to the development of digital cameras, teaches us an important lesson. It can be described by the difference in leadership at its best when Kodak went bankrupt in January 2012 with its sales declining to one tenth over ten years from the peak in 2000, while Fuji Film succeeded in increasing sales 1.5 times. In his book *Tamashii no keiei (Management by Soul)* (Toyo Keizai Inc.), Mr. Komori Shigetaka, the chairman of Fuji Film, says that “muscle intelligence” (a kind of wild intelligence or intuition) is important to overcome difficulties. Such a “barbarian intelligence” is exactly an attitude that Japanese companies are required to have.

Asahioka: This makes me bring up an image of the “chaos of voluntary knowledge” of Japanese companies as they used to be. At Toshiba, where I used to work, there was a technologic strategist called the *gishicho* chief engineer who played the role of strategic support with an ability to identify technology and quality. This chief engineer also supported the general manager of a business division. He formed a connection among the analogue parts of job sites like a master carpenter or a head gardener. He sometimes took younger employees out for drinks and while sitting around had them share implicit knowledge and their obsessiveness towards success, although we can no longer use such an approach as today’s young employees are unwilling to accept this (laughs). It seems undeniable that such a connection has been lost due to prioritizing the digitalization of their work. As a result, Japanese companies have been



filled with staff with poor intellectual curiosity who do not move outside the box often enough.

In this environment, important challenges that are directly linked to international competitiveness of Japan are education and the cultivation of human resources. Universities at the present are subdivided into special fields and do not have a curriculum based on students' objectives. This goes against the times, and the integrated knowledge necessary for innovations and the future knowledge industry will not be born from such an environment.

For example, leading universities in the world are working on a project called MOOC (Massive Open Online Course) in which their lectures are made public, free of charge on the Internet. Here everyone from a child to an adult is allowed to study as long as they can understand English. At some universities, discussion forums are beginning to be formed for those who have viewed the lecture video and become interested in the subject. Universities in the past were a place for teaching students unilaterally, but the atmosphere has certainly begun changing. This is exactly an integration of the Internet and reality, and I believe the knowledge that will develop the future generation will be emerge from such a place.

Nonaka: The place doesn't even necessarily have to be a university.

Asahioka: That's right. For example, in Silicon Valley, experts in various fields spend twenty minutes or so in so-called "breakfast meetings" to chat and discuss, and a new knowledge will emerge. A place where innovations are created has these characteristics.

Changing industry classification fundamentally

Asahioka: However, it is impossible to restore what we have lost in the past as it was. Now that we no longer suffer from a shortage of goods, we need to renovate the industries and various institutions into a form better suited to the modern times.

For example, thinking about the identification of industrial classification, all the past classification of the primary, secondary and tertiary industries has to be changed to a new classification by role based on knowledge, such as an industry that detects knowledge and accumulates it into a database, an industry that analyzes and processes knowledge and databases, an industry that transmits and controls them and an industry that sends them out and creates new values, all of which will create a huge group of industries.

Also, with respect to medical services, although hospitals have played a central role in the past, a different picture will come into sight if we place patient at the center; the industry can be seen from the perspective of offering the value of consistent problem solving, such as diagnosis, treatment, rehabilitation and prevention. Similarly in agriculture, if we place farmers and consumers at the center instead of an industrial structure centering on the government and agricultural cooperatives, fertilizers, GPS and unmanned drones could be classified into the same category from the perspective of securing foodstuff and safety.

The more business domains are integrated, the more we will be driven to think about them, focusing on people. From that perspective, I believe that new innovations will be created through rewriting "the input and output tables of knowledge industries."

Nonaka: In that regard, I find possibilities in a new type of apprenticeship. As I mentioned earlier, tacit



knowledge at the business frontline cannot be articulated into a manual; it can be acquired only through common experience with a superior. Knowledge is transferred only by facing the superior with the whole personality and sharing physical experience with him or her.

The behavior and the way of thinking of Honda Soichiro and Steve Jobs will remain for a lifetime in some engineers who worked with them. Such a *ba* (place) is very important and we must keep creating such a *ba*. However, it does not mean that top management and its subordinates merely need to stick together all the time, but a sense of time management to maintain mobility also becomes essential. IT technology is useful to that end.

Asahioka: In the knowledge industry, we need to evaluate companies not only by numerical criteria such as balance sheets and income statements, but also by criteria for intangible assets, such as speed in decision-making, the number of people capable of grasping the essence of things and accumulated knowledge.

Nonaka: I agree. Such a dynamic relationship has to be modeled and systemized. Looking at the world, a cross-industry national project also includes the military; that is, an industry-government-academia-forces project. As I mentioned earlier, discussions about the military have been neglected in Japan because of the defeat in the Second World War, but we should lift the ban on discussions about the military to give rise to innovations, as all human acts are condensed in a war.

Learning from the committee of intellectuals of Nitobe Inazo

Nonaka: Broadening our perspective further, we have to apply such a way of thinking to the management of the nation. I am now doing research on leaders who led world politics during the 1980s, such as Ronald Reagan, Margaret Thatcher, Mikhail Gorbachev, Helmut Kohl, Deng Xiaoping and Nakasone Yasuhiro. What is common to them is that they achieved a good balance between idealism and pragmatism in the process of spiraling up explicit knowledge and tacit knowledge. In other words, they were aware of how to keep a good balance between the national vision and the current economic development. Gorbachev and Deng Xiaoping were both leaders of socialist countries; however, they respectively ended up failing and succeeding, despite both having in common a macroscopic view. Given that industry does not exist without a nation and that the nation does not exist without industry, it is essential to apply new knowledge to this end.

Asahioka: From the perspective of a nation, I think it desirable for a nation to unleash the potential of everyone in the public. I propose that Japan establish an organization like the “Ministry of Knowledge and Innovation Creation” to think seriously about what a knowledge nation is and what innovations are. Through these efforts, we should build a collaborative framework with the world through knowledge. When Nitobe Inazo was the Deputy Secretary-General of the League of Nations, he made efforts to establish the League of Nations International Committee of Intellectual Cooperation. In this committee, intellectuals from around the world such as Henri-Louis Bergson, Albert Einstein and Maria Curie participated and sought peace while sharing the most-advanced knowledge in the world. I think that it would be very interesting if such a committee of intellectuals comes back to life.



Nonaka: To make the world a better place, an artisanship approach is essential; that is, thinking about the essence while taking actions and relentlessly seeking what good is. Like phronesis (practical wisdom or prudence), the concept presented by Aristotle, it is required to make the best judgment and take the best action based on our values and ethics. This is a behavioral pattern entrenched in the DNA of the Japanese, and I believe that precisely in this regard the Japanese will be able to lead the world. Now Japan as a nation should unleash the knowledge potential of all people and all organizations.

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