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INSTITUTE**

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On 5th December 2018, the 14th Symposium of the Japanese Civilization Institute took place. Mr. Yoichi Ochiai—Media artist and Associate Professor at University of Tsukuba—gave a special lecture under the theme, “Thinking about Japan after 2021.” He talked in depth about his research, about his vision toward the new era after 2020 in which the Tokyo Olympics and the Paralympics take place and about the social trends that should be solved with technology. As always, Naoki Inose, director of the Japanese Civilization Institute moderated the lecture. Here is an extract from the event.

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A Report on Our 14th Symposium

Thinking about Japan after 2021

Yoichi Ochiai

vs.

Naoki Inose

Seek new grounds with technology

Ochiai: Firstly, let me briefly introduce myself. I have been calling myself a Media Artist since I graduated university. But since I earned a Ph.D. at the University of Tokyo in 2015, I have taken 3 positions, one of which is the head of Digital Nature Laboratory at University of Tsukuba. I also serve as CEO of Pix-

ie Dust Technologies Inc., which I founded, and am also the Associate Professor and Advisor to the President at University of Tsukuba from 2017. Lastly, I am the representative of the JST CREST×Diversity Cross, a university project put forth by the Ministry of Education, Culture, Sports, Science, and Technology.

As a researcher, I was featured on the front cover of “Nature Index 2017 Japan,” a database that assembles articles published in science

journals worldwide by country and institution categories. The title of the article was, “National reforms seek new routes to innovative success.” Most Japanese researchers are hired by the government, but unless we create another route, I don’t think Japan will succeed, which is why I’m trying to find a different route.

So what kind of research do I do? Let’s have a look from a different angle. If we look at Nihon-no Kenkyu.com (research-er.jp), it’s done auto-



Yoichi Ochiai

matically so there are mistakes from time to time...expertise are automatically estimated too...engineering/human engineering, science/information science, engineering/general engineering, social sciences/sociology, engineering/materials engineering...I guess they're more or less correct. Estimated keywords that are related are, artificial arm and leg, visual and tactile function, haptics, tactile sense display, interaction, computer-generated hologram, acoustic levitation, hardware, texture expression...aging.....more or less right.

Amongst the "Research Projects that are Underway," are "Cultivating production techniques for developing a creative, collaborative relationship between human intelligence and machine intelligence." Others include, "Specification development and problem solving of mass producing Ultrasonic focal point speakers," "Social implementation of space viewing tactile technology based on ultra AI foundation for a society with diversity using calculators," and "Cultivating viewing tactile presentation foundation of multifield." A lot of people tell me they don't understand a word I'm saying when I explain what these are, but I think you can see that research is being done (laugh).

A few billion yen is funded by the country for projects appointed by the government. As people involved

in the project, I regard it our responsibility to raise our voices and let people know what we do and keep producing while actively stressing the importance of committing to society.

So, let me introduce what we actually do, not just for research. Let's begin with my job as a Media Artist.

One example is something I did in early 2018, when I was asked to create an art piece by TDK for promotion. To being with, I don't regard art to be a device for promotion. Therefore, after stressing that I won't be creating an art piece for PR and advertisement, I made an art piece called "Silver Floats." A collaboration piece with TDK's technology, I asked them to film the making process and use that for advertisement.

What I had in mind was to make a "floating sculpture." I wanted to make an object in a shape of wave sources using mirror surfaces and float it while turning it round and round. The sculpture will distort the surrounding landscape, alter it to waves and blend into the atmosphere. At the same time, we had them shoot sequences of us holding workshops at Silicon Valley and exchanging new ideas about floating with Japanese students. I had them use that process for promotion.

It's a fun art piece just looking at it, but that's not all. Things don't float in the air easily. Objects fall to the ground by gravity unless something stops them. This art piece was accomplished by blending control technology and 3D print technology. This is something that I do as an artist. Next, I'll talk a little bit about my research.

My laboratory does research on 3D image recording photographic technology. For example, we regularly do an optimized calculation to float microscopic particles in the air with a specific acoustic and magnetic field. This art piece was created from the technology acquired during these kinds of research.

There is the academic conference SIGGRAPH Asia 2018 held from December 4th to 7th and our laboratory will announce the highlights of this year's research project. About 50 researchers constitute our team. In 2018, we presented 10 research projects at academic conferences in Vancouver in the Summer, and 4 research projects in Tokyo in the Winter.

Inose: What kind of members constitute your laboratory?

Ochiai: Out of the 50 members we have, 45 members are students, among which only one has a Ph.D. There are 18 members who have an MA and the rest are undergraduates. I serve as an associate professor, while another person serves as an assistant professor. Also, there are two postdoctoral researchers and one CTO from my company. Only those with a Ph. D can present a paper at top conferences, so we'll be needing another 3 to 4 years until the students can present papers. Meanwhile, I need to make effort.

When I established the laboratory at the university, I made a promise as an educational organization to raise 50 students. I kept that promise, so from here onwards I'm thinking of reducing the number of students and put more strength in raising energetic researchers with more of an intimate father-to-son type education.

Inose: You have turned various research development into practice, haven't you?

Ochiai: If I find a social problem that could be solved with technology, I tackle it whatever the genre may be. When I'm outside the realm of technology, I see myself as an "eternal amateur." In that way, I'm able to create a non-conventional technology. Besides, I think the person who is faced with the problem

understands the problem the most. For example, when we look at the situation of Japanese society today, we can foresee an increase in people with bad eyesight in the future, when we consider the accelerating aging population. In order to deal with that, one of the things we are developing is a retinal projection technology. In a recent academic conference, we exhibited a system to project direct images to the retinal without using lenses.

Inose: No lens results in downsizing too, right? How does it work?

Ochiai: We developed a way to use an optical system that doesn't use the lens, that replaces the role of a regular lens, adjusts the focal point and forms an image. We use a "Retina Projection System" that hardly has any physical components. It projects an image directly on the retina. It is a laser projection method that calculates hologram patterns according to the depth of field in order to optimize light without a lens. The image projected onto the retina is converted to 3 dimensional and by changing the depth of focus with a hologram, an image with depth is reproduced inside the eye.

We have 60 to 70 projects such as these a year, which sometimes produce good results.

Also, we do research on digital fabrication. We solve structure deformation and control using simulations done by calculators. Specifically, it's about trying to build the structure that constitutes the range of motion of a robot by using moves expressed by a 3DCG animation, but it's quite difficult to shape deforming 3D structures using optimizing calculation. For example, it's easy to express a rabbit bending its ears with CG moves of a computer. But, if you print this model on a 3D printer, it won't move the same. You need to solve the structure calculation with AI, to understand

what kind of shape it will become with how much pressure from the outside, and what kind of limits and structures there are.

A konjac can change its form whichever way you bend it, but a rabbit's ear should only bend in a certain direction. At the same time, human joints only bend in certain directions too, right? We have to thoroughly discuss how we're going to make the materials—in this case, the bones or the muscles—before solving the optimizing calculation.

In the case of a robot picking an object with its hand, we have to design the structure required for that movement using a software, make hardware based on the material with a 3D printer, and check how it moves when we maneuver it with an application. Only then, are we able to create something that works.

A laboratory normally only handles the simulation of the software and that's it. Or if it specializes in hardware, it only designs and builds prototypes. Our laboratory handles both software and hardware and finalizes it until it is functional, which is what's so hard but fun about our laboratory.

Other projects include the development of flexible rigid bodies. A flexible structure that uses parts cut by laser cutters and formed by combining patterns designed by computational geometry, can stretch up to 5 times its size. It is a sturdy material that has many needs such as natural disasters and outer space missions. For example, it may come in handy when you need to cross a river during a natural disaster. These are some of the things that we made and produced to the world during these few months. It's the kind of things I do. Also, this is something I did in 2017, but I did research on optimizing sound from ultrasonic speakers. I'm now trying to find a way to use these audiovisual devices in different ways in society.

For example, in 2018 we held a



Naoki Inose

concert under the name, "Transformable Music Performance" to demonstrate what we achieved. We attached a motion capture to the end of the conductor's baton and added tactile technology to the audiences' seats so that the composer's orchestral world is enticed into the video system. Through this, the audiences were able to experience the music with their bodies through technology. We also have another version of this called, "Music Performance without the use of ears."

Inose: I attended the concert and saw some audience holding a type of white ball.

Ochiai: It's a system for people with hearing difficulties to enjoy music. There are few small speakers inside the white ball that produce tactile sensations and vibrations. It first started when I did a collaboration with a band called ONE OK ROCK. We made a jacket with which you could listen to the sound using every aspect of your body when you wear it. They used this jacket for the band's promotion, which was eventually called ORCHESTRA JACKET. Few dozens of very small speakers are attached to the jacket and when you put it on, music plays all over you. Amongst the people who came to listen to the sound, people with hearing difficulties were the happi-



est, which led to creating this concert.

Under the context, I'm right now immersed in X DIVERSITY, a government project put forth by JST. We're doing research on how we can support people who lack or have little human capabilities using AI and robotics. Just recently, we had news that Hirotada Otake walked on his own with artificial legs. That was something this project developed.

What's interesting about this project is that the 4 people involved, come from completely different fields. The members are constantly holding workshops while creating something that can be put into practice in society.

Inose: So you're saying people from different fields have assembled for this project?

Ochiai: It's a project where people both assemble in order to solve a problem and work separately when

they can.

Using technology to deal with a non-adjustable modern world

Ochiai: I have written 6 books during 2018 alone. The reason why I write these books is—like I said before—to tell the world why we're tackling these government projects. But more importantly, I think it's necessary for the Japanese society's future to send the message to “use technology” to the aging population of 60 and over, who are our main target. No matter how much you send these kinds of messages on SNS, you can't reach this particular generation. But we can reach them if we use books, newspapers, and television. This is exactly what I wanted to point out in the book I co-wrote with Mr. Inose too.

Regarding the issue of the declining birthrate and accelerating aging

population, it won't be such a problem if we are able to land softly, for the optimization of infrastructure will absorb the gap. However, if the population declines drastically all of a sudden, distortion will occur in the society. The global society is seeing a rise in population and there are many young people. Whereas the Japanese local society today is completely the opposite with declining population and very few young people. When we look at the circumstances of our country today, which contrasts to the outside world, I think the fact that there are very few younger generations younger than ourselves, is going to create a huge problem in the future.

First of all, innovations are going to be scarce in a society where there are very few young people. There's also the issue of lacking workforce. We're trying to discover ways to solve these social problems brought upon by the declining population. The answer lies in technology.

There have been projects in the

past that attempted to solve the accelerating aging population issue with technology, but none of them really worked. The reason is because it is very difficult to succeed in the area because you have to have the following 4 requirements: you need to take advantage of the trend in society and be fully aware of the issue in question, have advanced abilities for technological development, be brilliant in business and have artistic and entertainment qualities that reach people's emotions.

Inose: If you don't have artistic qualities, you won't be able to share the image of a changing society if you take a step.

Ochiai: Exactly. If you take part in a music concert that incorporates technology, you can directly feel and understand what it's about. Similarly, if the design is good, you'll acknowledge it as "cool!" just looking at it. But the technology needs to be brilliant and the idea has to be recognized by the society no matter how cool and advanced the technology is, or else it will simply become history and someone will look back and say, "hey, remember that guy who did that..." When all 4 requirements are cleared simultaneously, an inflection point will occur. I'm thinking it's my job to try and think how to make that happen.

Recently, an essay written in 1930 entitled, "Economic Possibilities for our Grandchildren" by the economist Keynes is center of attention in my online salon. Hiroo Yamagata who translated Thomas Piketty's "Capital in the Twenty-First Century" is now translating the book. The content goes like this: "Our situation of the economy is bad right now (in the middle of the Great Depression after WWI). But when we look at it in the long run, you can see that the economy has developed fast since the end of the 17th Century. This was possible due to the rapid economic

development and accumulation of assets/capital. The capital of Great Britain is continuing to show an increase of 3.25%. If this continues, the economy will no doubt become abundant. As a result, a lot of people will no longer have to work and they will be able to enjoy their leisure. Rich people and money lenders up until now are there to accumulate the capital. When this is all over, those who are able to live and enjoy the moment are the ones who will be respected." What Keynes is saying here, I think is quite true.

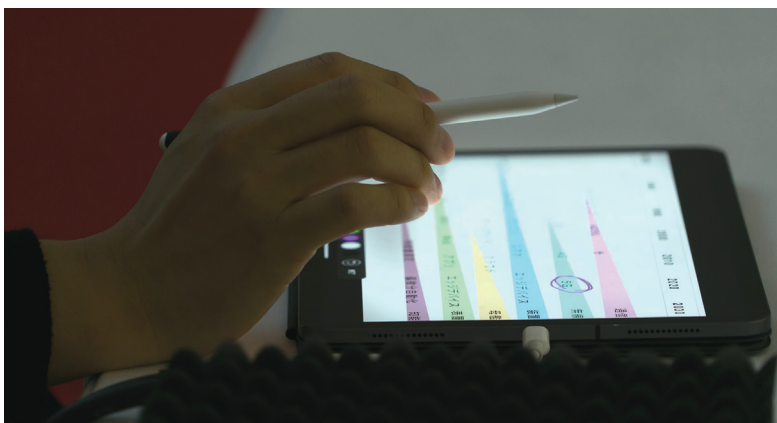
Other words, we're busy because of the work we produce. For example, if we destroy every computer, put a stop to the film business, the television industry and producing of cars from tomorrow...If we could destroy everything that was invented because of technology and start to live in agriculture and work for just a small amount of food, clothes, and shelter, most people wouldn't have to work. Our society has already created technology and established a capital required to maintain that, which Keynes assumed was going to happen.

Furthermore, Keynes points out that we're now in a "temporal non-adjustable stage." This point, I think is important. He is saying that we're now in a "non-adjustable" stage which lies before the stage in which people don't need to work anymore. From here onwards, we need to pre-

pare a soft landing for declining population issues and declining birthrate and aging population issues by filling it up with technology. However, these are just preventions to compensate for a non-adjustable society.

I think unless we are aware that we're going to use technology to deal and solve this non-adjustable stage, we're not going to be able to feel we have a bright future ahead of us. We feel hopeless when we think that the country is going to perish because of the declining birthrate and aging population, but if we know that it's for breaking down the non-adjustable stage, don't we feel a lot better? It's like thinking "I have come down with the flu, so I'm going to eat ginger and tuck in and stay warm," instead of "I think I'm going to die..." If you think like the latter without an assurance that you're going to get better, you won't be able to heal, even if you can.

Our society has entered the non-adjustable stage. To prove this point, look at some of the very basic social systems like Immigration Control and Refugee Recognition Act and Waterworks Law, which need revising from scratch. It will be extremely hard for people to make an adjustment to all these malfunctioning factors that are affecting the society, so I think we need to change everyone's recognition to adopt technology as a way to deal with these things.





Inose: They relied on the Bank of Japan to solve the non-adjustable economy, but it didn't work.

Ochiai: Just this morning, I had a discussion with Mr. Takeshi Sasaki, former president of the University of Tokyo, and we were talking about how the Abe Administration is done with taking measures on financial and legislative policies. But we need not be disappointed. From here onwards, we just need to take an approach that makes the most of technology and software. We need to spread social recognition and accumulate the know-how not through the media, but through influencers and small-sized media. I think that's the situation we're in right now.

2025—present a solution to the aging population issue

Ochiai: When you look at the society from this kind of angle, you can find many issues that we can solve with technology. A good example is automation of wheelchairs.

Inose: Automation of wheelchairs?

Ochiai: Most elderly people are going to end up in wheelchairs and it is said that about 15% of work done by people who look after the elderly are spent pushing their wheelchairs. When you listen to their voices, one or two nurses have

to attend one wheelchair and it is extremely inefficient. I developed a technology to move autonomous wheelchairs. Also, in hearing, "it's better if 2 wheelchairs could move at once," I made something that does exactly that. If you put a marker on the pathway, it's very easy to move wheelchairs automatically. If you also add a marker to the wheelchair, they can acknowledge each other and link each other's moves. For autonomous driving, you need technology to acknowledge surrounding circumstances and detect and stop if something gets in the way. We use AI for this.

Inose: Like storehouses of Amazon?

Ochiai: The framework is similar. But if you automate the movements, the experience becomes richer, like you get to communicate more. This society has many problems that can be solved easily if you just start to tackle them. Therefore, we need to solve them one by one.

Inose: So, you're saying we solve these issues one by one and recover the society.

Ochiai: In the summer of 2018, Mr. Shinjiro Koizumi (member of the House of Representative) and I broadcasted an event called "Heisei's Final Summer Seminar" on niconico video. It featured document papers presented by Kazuto Ataka (CSO of Yahoo), which became center of attention. Among them was a data revealing "The Transition of GDP by Country." Japan today, in 2018, is in third place after the U.S. and China, more or less the same since 1995. German may tie with Japan in the near future. I think this is due to the "lost 30 years" of Heisei, during which Japan dragged their post-war success story, without a vision.

Nikkei News is often pointing out that research levels of Japanese

universities are declining, but I personally think that this is because our GDP is not increasing. In Japan, the GDP for each individual is not a big problem. But, facilities and equipment used for research are costly. Equipment worth a billion yen is necessary to discover one protein. That research achievement could become a breakthrough or could not. Moreover, even if you submit papers to the “Nature” magazine, you’re not going to get paid just for that.

A cultural, affluent society is not measured by GDP, but a society with a structure which can move a huge amount of money for investment. Moreover, when achievements are made, every individual should benefit from it and be able to live an affluent life. This difference in social structure is apparent when you look at research results. Until 2017, about 3,800 essays were submitted at conferences for machine learning, but in 2018, that number increased to roughly 7,000. 50 % of them are written by Chinese researchers. Over 60 % of first authors are Chinese too. It’s become like this because, today, the Chinese economy is soaring like a rising dragon. My research field requires more than a computer, but core areas of AI research can be done if you have a computer. If a population of 1.2 billion earn a computer through the bursting economy, AI essays will be written one after the other and Chinese people will conquer famous academic journals and international conferences in no time.

Japan is lagging behind in research of digital technology and people say that there are very few essays written and that corporations are not putting strength in research. But I think at the bottom of it all is the economic system that is malfunctioning. The social system is not ripe enough to invest in academic R&D. There’s also the situation of not being able to combine research achieve-

ments to social issues. This is one problem we need to think about in the future.

Also, with the accelerating aging population, it has been predicted that in the future, investment for the society is going to lessen even more. At exactly 2025, the people of the “dankai” generation (the generation born during Japan’s post-war baby boom) are going to become “koki korei-sha” (elderly people between 75-84). On that year, we’ll be hosting the Osaka Expo under the theme, “Designing Future Society for our Lives,” but underneath that, there may be big influences toward future investments due to financial reasons. The most populous generation is going to reach the age when they need the highest medical cost. I think unless we come up with some kind of countermeasure using technology, we’re not going to be able to find a way to maintain sustainable growth.

Inose: You’re saying as a developed country facing challenges, we should solve the medical issue of the elderly and present it at the Expo?

Ochiai: If we don’t find some kind of solution by then, we’re dead. Perhaps, we won’t even have the power to build pavilions and we’ll be standing before abandoned ruins saying, “they say Japan was devastat-

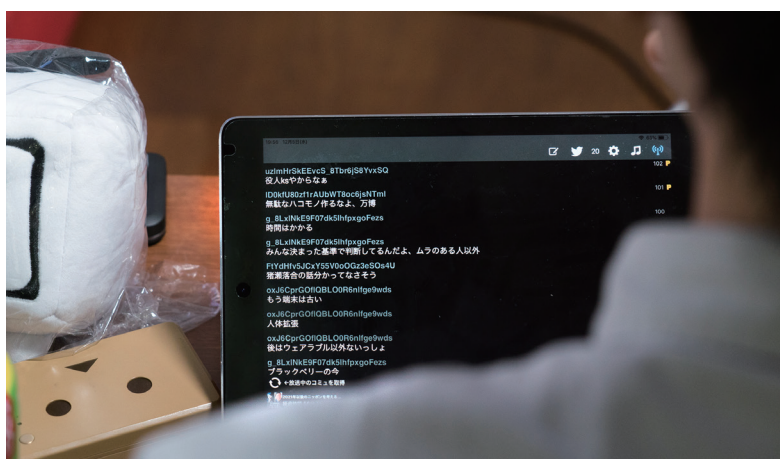
ed land such as this, 80 years ago too” and end up creating a total failure (laugh). We don’t want that to happen, so we need to show some results to make the society better by 2025.

Inose: And we have to connect it to business too.

Ochiai: We only have 7 years to show some results at the Expo. That’s why I’m in quite a hurry.

Having said that, I think we can find some hope in this society system. For example, look at the wireless environment that we have. From 2020, the 5G network will be equipped, which will dramatically improve our communication speed. I’m sure those of you who frequently travel abroad know, but there is no other country like Japan regarding good reception and signal. I think the communication environment is better here than in Silicon Valley. China is improving, but when you think of China as a whole, Japan’s coverage is higher. Other words, because Japan is already equipped with a massive amount of wireless environment, the base required to excel in robotics and video transmission—which will become more important in the future—is already there.

Inose: Thanks to the notorious tele-



phone poles! In Western countries, they hid the wires underground to maintain the view and in China, there are still areas where they don't have electricity.

Ochiai: If you have electricity and a tower that stands in the air, you can put antennas around it and you'll have radio waves transmitted. We still have pillar-type concrete base stations, so the environment is fully equipped. The environment is perfect for solving problems.

Inose: Japan is the closest country to 5G.

Ochiai: And when we think of an application that matches 5G, the aging population issue exactly fits. When 5G is introduced and network transmitting delays become smaller, various social problems can be solved with robotics, including remote control of wheelchairs—which I just talked about—remote medicine and remote surgery. I think this is a problem we can solve if we just put it into practice.

To present some of these processes and show our ambitions for solving these issues at the Osaka Expo, we need to be able to do some demonstrations before the Expo. Therefore, these projects need to be well underway by now.

At Ginmokusei, a housing for the elderly with home care services which I have acquaintance with, elderly people serve as shop clerks at a sweet shop and kids nearby come to visit. The mechanism that combines elderly people to the local community, I think is interesting. An example Ms. Oishi of Mediva introduced at "Heisei's Final Summer Seminar" featured British elderly people with dementia learning how to use iPads to keep in contact with society. I think it's important that we always incorporate ways to connect and communicate with society in our lives.

In the Japanese working framework, people connect strongly with the society until they reach the age of 60 to 65 years old, but once they retire they lose connection all of a sudden. That's where the problem lies. I think it's a problem that people end up becoming lonely after their retirement, like the time when we didn't have Internets, despite having all these different ways to transmit information like SNS and video posting sites. It's not something that takes up a lot of money, so we need to involve elderly people in our society's trend of communication. Otherwise, we can't solve the problem we have of silver democracy.

The worst scenario is to be stuck at home with no one to talk to. There are many cases in which people become in need of care or their dementia progresses when they start avoiding communication. We need to think about how we can increase opportunities to connect with society using IT.

Inose: A housing for the elderly with home care services is a new approach. Next, we could turn public housing to privately operated public homes and create a share house where various generations could live together.

Also, regarding businessmen and their retirement issue, I think we need to drastically change the seniority-wage system and lifetime employment system that we currently have. It's very difficult to suddenly start side jobs after retirement, so we need to change the system of just going to and fro work. We could do without retirement if we could turn work into something more professional including telework and telecommuting. I think we need to cultivate something while working as businessmen.

As a developed country with challenges, let's tackle aging population issues

Inose: There is a reason why we chose 2025 for the Osaka Expo. It's because we won't take measures unless we set a goal.

Ochiai: That's true. If we don't set a goal we won't take measures. We can't move without a vision. If we can solve the problems we have in society using technology, I think other countries will respect Japan. That's a good goal.

If young people think that they should travel overseas to solve global issues, it's half right and half wrong. Our country is in a peculiar position facing a unique and strange local problem that is going to become center of attention in other Asian countries in the future too. China is said to face social issues similar to ours in the late 2040s to 2060, and other countries will follow suit and face issues of an aging population society too. Being one of the most advanced regions in the area, the question is how we're going to export our technologies in the future.

I feel America hasn't changed its central values ever since Andy Warhol was around. Mickey Mouse is popular, Coca Cola tastes good and iPhone is useful. But there is no Coke sold at 1,000 yen and there is no iPhone worth a million yen. There are of course no Hollywood films with difficult, contextual meaning either. America has invested a large amount of capital in creating cheap contents that everyone can enjoy. As a result, people around the world use America's contents. The worldview of everybody eating hamburgers with ketchup is rich in its own way.



Inose: It's something the Americans achieved.

Ochiai: Yes. Commodities like Facebook and Apple emerged as an extension of that. Meanwhile, European countries have a completely different stance compared to that, with brands like Louis Vuitton and Don Perignon. European countries ripen their culture. So, what has Japan produced during the 21st Century? It has converted values of safety, relief, and trust in hardware products and produced them. Other words, it made electronic goods that don't easily break down and safe cars which you can entrust your life upon.

Inose: It took the position of a craftsman, right?

Ochiai: Then Americans gave out iPhones and smartphones and SNS spread around the world. No matter

how hard the Japanese people try and develop applications that are useful on the Internet, there are limitations. It's probably impossible to solve this non-adjustable society with commoditized hardware.

It's likely that rich people no longer want to use smartphones that have now become mere commodities. They want to use sophisticated iPhones, but there are no high-class iPhones available. So instead they put their iPhones in Louis Vuitton cases. Recently, Android made commodities out of smartphones and iPhones have lost its value as a status symbol. Meanwhile, Chinese smartphone maker Huawei started selling smartphones with Leica lens. European makers are bound to follow suit and provide high brand smartphones and smartwatches in the future. Or maybe, licenses of Leica, Louis Vuitton, and Chanel will be inscribed on Chinese hardware.

So what can we do in a society that is evolving in this way? As I have been saying, the answer lies in creating assistive devices and equipment for nursing the elderly using technology. If safety and relief are brought about in hardware that suits our lives, the technology will spread in fields of medicine and child rearing and everyone will benefit from it. I think it's important to try and take measures in that direction. We should try and use what leading companies of Japan like Toyota, Panasonic, and Sony have built over the years, to these kinds of things.

We can do it if we set a direction. I have hope that these 7 years are going to be a time for accumulating knowledge.

Inose: So, for 2025 we should set our goals on elderly people and put every Japanese technology in it.

Ochiai: We need to seriously think

about how we're going to land the difficult conditions Japan produced during the Heisei Era. When we do that, we need to be aware of both marginal costs and marginal utility that is required for individualizations using the software. Simply put, marginal cost is the cost needed to reproduce a product that has already been developed and marginal utility is the merit acquired through that. There is always the question of earning marginal utility that balances well with marginal cost. But when we deal with hardware, this marginal cost becomes close to zero. Cost is required for initial development, but labor expenses are not required for mass production, so the cost is kept low. However, it won't work if you just select cheap marginal costs, without taking into consideration the craftsmanship behind it. Strategies of software only work when you are able to create a situation in which everything fits in.

Issues that couldn't be solved in a mass-produced society which we had up until now, can often be solved by an individually produced society, which we are in today. While thinking carefully about cost, we need to consider everything with our own hands one by one without depending on fate. In fact, a social condition where there are issues to be solved, a direction to move toward and a

technology to be developed are full of hope. We first need to try and solve the software problem with technology, then we need to move our hands and sweat in areas where only people can solve the problem. A society like this, in which results are recognized, has the potential of being fun and worth working for. If you realize this, you need to act fast. There are very few people who are actually moving their hands and searching for a way to change the society in an appropriate way, so it's very important that you move by yourself. I hope to share this kind of vision with as many people as I can.

Inose: 7 years seems short, but a lot of things can change in 7 years. Since 2013, when Tokyo was chosen to host the Olympics, look at how many tourist have entered Japan toward the Olympics in 2020. Like Mr. Ochiai says, technology is going to advance even more by 2025 and with it, we're going to see a further increase in the aging population, so our issues are going to become more real. That we chose 2025 is because there is a solution there. Up until now, we have come this far without setting any goals.

Ochiai: I belong to a generation that has neither experienced the 1964 Tokyo Olympics nor the 1970

Osaka Expo, but we're still using Tokyo's city structure that was designed for the Tokyo Olympics. Also, the Osaka Expo—which was held under the theme, “Progress and Harmony for Mankind”—not only exhibited the famous “Moon Rock” but also demonstrated the technological basics for Omnidirectional cameras and the Internet (LAN). Science Fiction potentials that humans had in mind for the future, was already present at the Expo. If so, in the upcoming Expo, we need to breathe life into human imagination with technology and demonstrate to the world how we're going to incorporate that into our lives.

Of course, we need a vision for the future. But, that vision will become stronger if it's something that's taken for granted. The future society, which humans imagined, is not mere fantasy. It's important how we're going to show that.

The city structure built at the Tokyo Olympics was based on industrial development, increasing population and standardization. In a way, we need to change that to a decentralized structure based on diverse values and declining population. That turning point is going to come in 2020. It's clear why New York and Silicone Valley are so eager to take in autonomous driving. It's because their city population is increasing and they're suffering from traffic jams upon entering highways and bridges. There are many people who think they could take a break for a brief moment if they could be transported by autonomous driving. There are many rich people who want to purchase that technology, so the needs are extremely high for autonomous driving. However, when we look at Japanese cities, taxis are always available and the metro is spread across underground. Moreover, above ground, the Yamanote Line serves as a circular belt conveyor and the roads including shutoko (Metropolitan Expressway) reach



every corner of the city, forming perfect layers for transportation. That's why there are very small needs for autonomous driving in Japan. I think our social structure is peculiar. The theme for 2020 and there onwards I think is how we're going to remake the social structure built on inflation to cope with the sudden increase in population, to something that is suitable for a declining population we have today.

Inose: Both the shutoku and shinkansen (bullet train) was created in

1964. The Soviet Union film "Solaris" was screened in 1972, which featured shots of driving around the shutoku tunnels to express a society of the future. Other words, from the outside world, the future was in Tokyo. The "future" was also found at the 1970 Osaka Expo. Nearly 50 years have passed since then.

We will hold our second Olympic Games in 2020. The 1964 Tokyo Olympic, 1988 Seoul Olympic and 2008 Beijing Olympic were all Olympics which every country experienced for the first time. Other

words, it was an "Olympic held by a developing country." For the 2020 Olympics, my goals are to create a "sophisticated Olympic held by a developed country." One important theme is to reduce medical costs and extend lives. As individuals, we must make effort and do sports too. I hope the issues we had in 1964 and 1970 will be solved in 2020 and 2025.

(Reprinted from "Shukan Dokushojin," 1st February, 2019, No. 3275 & Web Dokushojin)

The panelists

Yoichi Ochiai

Media Artist

Pixie Dust Technologies.inc CEO / Associate Professor and Advisor to the President at University of Tsukuba

B. 1987, 31-years-old. Ph.D. (the Applied Computer Science / University of Tokyo, Graduate School of Interdisciplinary Information Studies in 2 years—the fastest record). After becoming a JSPS Research Fellow DC1 and a Research Intern on Microsoft Research Redmond, Ochiai joined the University of Tsukuba, School of Library Information and Media Studies as Assistant Professor from 2015. He is the head of Digital Nature Laboratory. In 2015, he founded Pixie Dust Technologies.inc, which he serves as CEO. From 2017, he is Advisor to the President of University of Tsukuba, Visiting Professor of Osaka University of Art, and Visiting Professor of Digital Hollywood University. He established the Strategic Research Platform toward Digital Nature through Pixie Dust Technologies.inc in December 2017 and became Director of Platform and Associate Professor of University of Tsukuba.

Naoki Inose

Author. Born in 1946. In 1986, he received the Souichi Ooya Nonfiction Award for his book "Mikado no Shozo" (Portrait of the Emperor). In 1996, he received the Bungeishunju Readers' Award for his book "Nipponkoku no Kenkyu" (A Report on Japan). In June 2002, Prime Minister Junichiro Koizumi appointed him to the Promotion Committee for the Privatization of the Four Highway-Related Public Corporations. He served as Tokyo Governor from December 2012 to December 2013. In December 2015, he became Special Advisor to Osaka City. His books include "Show 16-nen no Haisen" (The Defeat in Showa 16), "Persona—Mishima Yukio Den" (Persona: The Story of Mishima Yukio) and "Picaresque—Dazai Osamu Den." (Picaresque: The Story of Dazai Osamu). Upcoming books include "Kyushutsu" (Rescue), "Senso, Tenno, Kokka" (War, Emperor, State), "Seigi ni tsuite Kangaeyo" (Let's Think about Justice), "Minkei" (Posse Man), "Tokyo no Teki" (Tokyo's Enemy) and in collaboration with Lully Miura, "Kokumin Kokka no Riarizumu" (Realism and the Nation-state).

Translation: Ayako Karino

The Emperor will abdicate on May 1 and a new era name will be announced on April 1.

What is “gengo” (era) for the Japanese people? How is it decided?

Naoki Inose will analyze gengo's history from the past to the present, together with the process the country will go through on the occasion using various examples.

Japan's modernization and Emperor system will be thoroughly discussed.

► Panel discussion:

The Japanese era name is going to change!

Norihiko Sasaki

NewsPicks COO and former editor in chief



Satoru Ishido

Journalist



Naoki Inose

Author, director of the Japanese Civilization Institute



Date: 5th February (Tuesday), 2019, 7 p.m.-9 p.m. (doors scheduled to open at 6:30 p.m.)

Venue: Japan University of Economics, Tokyo Shibuya Campus Hall (the hall seats approximately 100 people)

Address: 25-17, Sakuragaoka-cho, Shibuya-ku, Tokyo, 151-0031

Admission: 2,000 yen (please pay at the door on the day)

How to attend: apply through the site below:

<http://www.japancivilization.org/>

Contact: Japanese Civilization Institute

03-5456-8082



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Messages from Director

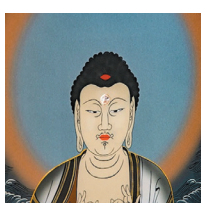
Japanese Civilization Institute has been introducing and selling traditional crafts of Japan. Although it is said that there is approximately 1,200 types of traditional crafts in Japan, its production is declining. As part of our activities, we hope to discover valuable traditional crafts spread across the nation, enjoy Japanese craftsmanship and its beauty inherited over the centuries, and develop it with you.



Tsumami Kanzashi
Crepe



Folding Screen
half size



Folding Screen
full size



KYO-YAKI
Earthenware



Japanese Bamboo
Basket Tokyotrad



Odoshi -
Samurai Armor