

## BACKGROUND

It is a well-known fact that technology and technical devices have been shaping everyday life in a modern society like Japan; and conversely, historical, socio-economic, legal and institutional, ethical and cultural contexts have been influencing technological developments. This is similarly true for daily practices in hospitals. Medical instruments and technologies can be used to manipulate the human body, ranging from general devices with extremely low risk to such ones highly invasive to patients. Many medical technologies and electronic appliance nowadays in use, however, took their roots in the second half of the 19<sup>th</sup> century and were increasingly merged into clinics and hospitals during the following century. At present, there can be observed a thrust of technological progress at high pace in the field of biomedical engineering and medical informatics – digitalisation and automatisisation – that contribute additionally to new configurations in in the human-device interplay in medical context. Medical procedures have been transformed in line with the current technological developments. By the same token, new forms of knowledge production increasingly rely on the mechanical instruments and devices which are applied for prevention, diagnostics, therapeutics, rehabilitation, curation of disorders and disease, or even bodily enhancement. Owing much to such developments, various routines in medical practices have been changing including surgical operations, management of patient data, and the organisation of public health systems. It is not only practitioners that face new dimensions of uncertainties but also lawmakers that have difficulties institutionalising appropriate rules, procedures and legal standards in order to reduce the risk of (fatal) medical errors.

## RESEARCH FIELDS

The development and employment of medical devices can be understood as an ongoing process of negotiation among different players involved. Medical technologies and clinical practices may be defined as societal phenomena, shaped and embedded in multiple ways in their historical, institutional, cultural, discursive, social and political-economic context in Japan. Their manipulative nature could blurr the existing boundaries between (new) life/death, disease/health, (dis)-abled, as well as body boundaries and human identities, whereby provoking legal and or public controversies. To respond these ongoing controversies, firstly we would like to follow the dimensions of the field, Linda F. Hogle (2008: 841-873) has suggested and drawn attention to in her article on “Emerging Medical Technologies”, displayed in the respective chapters. More precisely, the aspects including:

- Ways of Knowing: Diagnosis, Disease Classification, and Technologies
  - Technology Histories
  - Technology, Organization, and the Medical-Industrial Complex
  - Social Constructions, Material Practices, and Assemblages
  - Classifications and Standardization
  - Subjectivity, Identity, and Emerging Medical Technologies
- Trials of Emerging Technologies
- Technological Modifications of the Body



## DIJ WORKSHOP HUMANS & MACHINES IN MEDICAL CONTEXTS: CASE STUDIES FROM JAPAN

- Prosthetics, Bionics, and “Being Fit”
- Enhancement Technologies (Body optimization, etc.)
- Regenerative Medicine

These aspects should be worthwhile utilising for our consideration since Hogle (2008: 863-865) implies that mobilizing these conceptions should contribute to “the future of the STS studies and medical technologies”. This means that her conception would provide the first starting points for a joint discussion on the field of human and machines in medical contexts in Japan and/or research on Japan, too.

### PURPOSE, APPROACHES AND STRUCTURE

Whereas human-technology interplay has been allegedly studied in various disciplines in Japan – albeit within predominantly engineering, life sciences and natural sciences – the contributions by humanities and social sciences seem to converge upon the fields of History of Medicine, Bioethics and Medical Anthropology. However, there obviously are limitations regarding the contributions by other disciplines of humanities and social sciences as well as occasions for academic exchange with engineering and natural sciences. We hence argue that currently there is still need for transdisciplinary research approaches to the field of study of *Human & Machines in Medical Contexts* within Japan.

In order to explore the issues arising from the clinical practices vis-à-vis applications of the (then new) medical devices, the workshop casts light on their various aspects. The participants will address features regarding the historical, legal, socio-structural, engineering and bioethical conditions and consequences of the interplay between humans and medical technologies or instruments, respectively health care practices in contemporary Japan. Moreover, as there is no fixed methodology canon, it requires scholars to keep a “methodological openness” for conducting research. The participants will reflect in their respective papers on the different theoretical and methodological approaches that enables us to study “human & machines in medical contexts” and discuss transdisciplinary approaches by using case studies from their own respective disciplines to illustrate the manifold facets of the field. We hence suggest that our interdisciplinary research should derive from a range of study fields such as Bioethics, Medical Law, Engineering Science, STS, Cultural Studies, History of Medicine and Anthropology; and this could be a starting point which enables us to encourage scholarly exchange and joint research on this field.



DIJ WORKSHOP  
HUMANS & MACHINES IN MEDICAL CONTEXTS:  
CASE STUDIES FROM JAPAN

## Policy and innovation efforts on medical devices

Christa Altenstetter, CUNY Graduate Center, The City University of New York

### ABSTRACT

Based on past research presented in *Medical Technology in Japan. The Politics of Regulation* (2014), and prior research on the EU and US, this qualitative shows how different ontologies and epistemologies in political science can place different analytic demands on researchers. These are to either develop an analytical framework for a theory-driven selection of indicators related to *regulatory ideas, interests, and (state) institutions*, or, alternatively, building on theoretical components to design a *problem-driven* analytical construction.

The current work seeks to understand how the medical device “gap” (i.e., devices imported from abroad) and the medical device “lag” (i.e., delay in the availability of innovative treatments to patients in Japan) have been addressed, whether they have been resolved *de jure* and *de facto* and, if not, why not. A primary interest is assessing the problem-solving capability of state institutions in Japan. Science and Technology Studies (STS) contribute to the policy research by incorporating an examination of the epistemology of medical technology. That provides, firstly, a fine-grained understanding of how regulatory ideas, embedded (state) institutions, and the power and politics of the government and its affiliated stakeholders, are the driving forces of regulatory policy-making and implementation at the macro- and the meso-levels of the political system. A second benefit of emphasizing an epistemological examination is that such a perspective can offer insights into why the goals of prior reform initiatives may not have been realised. The presentation ends with a discussion of the study’s design and methods such as document and policy analysis, interviews and field observations, including drawing on secondary literature in law, medicine and political science.



DIJ WORKSHOP  
HUMANS & MACHINES IN MEDICAL CONTEXTS:  
CASE STUDIES FROM JAPAN

Close collaboration between medical doctors and engineers to achieve innovation of medical devices

Kazuo Tanishita, Research Organization for Nano & Life Innovation, Waseda University

#### ABSTRACT

Most of the medical devices used in the medical institution in Japan are imported from overseas countries. The major reason of this excess is the weak industrialization mechanism of medical devices in Japan, in which clinical needs are not transferred smoothly to the manufacturing scene. As a result, medical professionals mostly feel difficulties to use the Japanese made device and employ the excellent devices produced in USA and other overseas countries. To achieve a strong commercialization of medical devices, there is the necessity to provide matching opportunities and an environment for close collaboration between medical doctors and engineers. However, it is still very difficult to fuse them due to disciplinary boundaries and different working priorities between the medical and engineering fields in Japan. This leads to the question, in which way these barriers could be exceeded to enable collaboration between the medical and the engineering field.

Therefore, we intentionally created a platform based on liaising academic societies for collaboration. The academic societies are expected to be neutral and to be able to overcome the cultural barriers for future advancement of medical device development. This platform is called “Commons for Medicine and Engineering in Japan” (*Iryō kiki mono-dzukuri commons*) founded in 2009. The mission of Commons is the following one: (1) To facilitate the development of innovative medical devices with high quality of clinical needs and manufacturing technology in Japan, (2) To offer the opportunity of information and idea exchange between medical and engineering fields, (3) To constitute the educations to create the experts of medical device technology. We also notice the innovation potential of small business operators in Japan accumulating many sophisticated technologies. The efficient transfer of sophisticated technologies to the medical fields is expected to achieve innovation of medical technology. That is the reason why the national and local governments in Japan are now strongly supporting the collaboration with small business in particular.

To conclude from this activity-driven approach, we demonstrate that medical doctors and engineers are able to become entrepreneurial innovators of medical devices simply by creating strong intention of overcoming the disciplinary boundaries.



The concept of *persona* as seen from the perspective of philosophy:  
**Brain death, Nō play, and robots**

Masahiro Morioka, Faculty of Human Sciences, Waseda University

**ABSTRACT**

In Japan, there have been many books, articles, and memoirs on brain-dead patients written by their family members, who do not necessarily believe that brain death is human death. Some of them believe that there occurs a kind of “dialogue/conversation” without spoken language between a brain-dead patient and the family members, although they clearly understand that a brain-dead patient does not have self-consciousness or rationality anymore. They believe that they can converse with something that actually appears on the body of their beloved one in front of them. This “something” should not be considered a spiritual entity or a soul. I have called this something, “*persona*,” a Latin word that means a person, or a mask.

It was the philosopher Watsuji Tetsurō, who first used the word “*persona*” in the sense described above. In his essay “Mask and *Persona*,” published in 1935, he argues as follows: In a Nō play, a Japanese traditional stage performance, a player sets a special mask on his face and dances on the stage. He says that a Nō mask looks like the face of a person who has died suddenly. However, as soon as a Nō player puts a mask on his face, the mask starts to show various expressions as if it were the face of a living person. The movement of the Nō player’s body breathes “life” into the dead mask and lets it show various emotions of a living person. At first, the player’s mask is that of a deceased person, but gradually the player’s bodily movement begins to give life to it, and finally, in the midst of a beautiful dance, the mask acquires vital sparkles on its surface. Watsuji suggests that in a Nō play the mask or the face is considered a locus of personhood, that is to say, “*persona*.”

His argument is helpful to understand how family members perceive a “*persona*” that appears on the body of their beloved brain-dead patient. Moreover, his argument can be extended not only to the case of brain-dead patients but also to the case of robots and other non-biological objects. Whether robots can have *persona* cannot be determined by the criterion if they have a rationality or intelligence only. *Persona* is a kind of personhood, but it is not the one that is widely discussed in contemporary bioethics. In my presentation, I will illustrate an outline of this concept, which has not received a great deal of attention in the field of European philosophy or robotic sciences.

One of Watsuji’s philosophical implications is that a *persona*, a kind of personhood, can appear on a “wooden mask” being set on a player’s face, hence that it should also appear on the body of a brain-dead patient, on the face or the body of a robot, or non-biological objects. My question is: What is *persona* anyway? It is not a soul, or an illusion in my head, or a simple projection of my wishful thinking toward the body or an object in front of me. Then, what is it?



## Medical record clerks and electronic patient records: Their impact on clinical practices and perceptions in hospitals in Japan

Kaori Sasaki, Otaru University of Commerce

### ABSTRACT

In 1999, the Japanese Ministry of Health, Labor and Welfare began to allow medical professionals to store their patients' records electronically. Since then, electronic patient records (EPR) have been seen as a way to improve medical surveillance, treatment, financial management, and research in Japan. In this process, medical professionals have been required to adopt standardized medical classifications so that each EPR can be accessed, monitored and utilized efficiently and systematically. In other words, the EPR policy has led to the increased standardization of medical practices. This presentation will explore ways in which this standardization has developed alongside the implementing of EPR.

In assessing the usage and dissemination of EPR, the role of medical clerks is important. During the first decade of the twenty-first century, EPR did not become widespread in Japan owing to, in part, the difficulty in handing patient records. In 2008, laws in Japan were changed to legally and financially encourage the employment of medical clerks (MCs) who keep medical notes (electronically) on behalf of physicians. This increased the use and dissemination of both EPR and MCs. Although MCs are expected to work closely with doctors, they have little medical knowledge and experience. Yet, they have manipulated the medical classification system which both hospital management and doctors rely upon. With this particular expertise, they should, I argue, be able to establish their own clinical domains.

This presentation will examine the impact of adoption of EPR and MCs at a hospital in connection with the ongoing processes of the standardization of medical practices and records. Whereas the normalization of medicine is determined by the Japanese welfare state system, the significance of standardization would, I argue here, be rearticulated vis-à-vis the emergence of novel relationships among various actors including doctors, MCs and EPR itself.



## Terminal care and Criminal Law: Focusing on the precedents in Japan

Yuji Shiroshita, Graduate School of Law, Hokkaido University

### ABSTRACT

Recent developments in medical technology regarding terminal care have enabled physicians to ease the patients' pain or prolong their lives. However, these developments evoked some legal problems at the same time. In the field of criminal law, they are generally divided into two categories:

The first is the "active (direct) euthanasia". Even under the development of palliative medicine, some patients might request physicians to be killed with lethal drug and alike in order to be released from irremovable pain. The precedent (Yokohama Dist. Ct., 28 Mar. 1995) admitted that this type of euthanasia may exclude the illegality (as homicide with consent) of the act performed under the following requirements: (I)the patient is suffering from unbearable physical pain;(II) the patient's death is unavoidable and the time of death is imminent; (III)the doctor tries every possible means to remove or relieve the patient's physical pain and there are no alternative measures; (IV) there is an explicit expression of the patient's will to accept the shortening of his/her life. Are these requirements enough to justify active euthanasia?

The second is the withdrawing (or withholding) life-sustaining treatment at the request of the patient or their family ("death with dignity"). The judgement of the Supreme Court (Sup.Ct., Dec. 2009) on this issue has not stated the general theory on its justification. However, it seems to depend on the District Courts' view (Yokohama Dist. Ct., 25 Mar. 2005) that the doctor's act needs to be justified by both "the limit of doctor's duty to perform the medical treatment" and "the right to self-determination of patients". Are these principles proper to explain the justification of such acts?

In my presentation, I will examine these topics from the viewpoints of medical criminal law theory and draw some conclusions on the physician-patient relationship in terminal care.





DIJ WORKSHOP  
HUMANS & MACHINES IN MEDICAL CONTEXTS:  
CASE STUDIES FROM JAPAN

Cybernic treatment with the cyborg-type robot HAL: Enhancing functional regeneration in patients with rare incurable neuromuscular diseases

Takashi Nakajima, Department of Neurology and Rehabilitation Medicine  
Niigata National Hospital, National Hospital Organization

ABSTRACT

The WHO definition of *health as complete well-being* is still widely accepted, however, became increasingly criticised because of its missing dimension for the operationalisation during scientific analyses, and for the increasing incidences in chronic illness in an aging society like Japan. Therefore, the widely quoted health expert Machteld Huber (2011, BMJ) suggests the alternative concept of *health* as the “ability to adapt and self-manage in the face of social, physical, and emotional challenges”. Accordingly, medical treatment would be interpreted as the provision of support needed to help patients to adapt to certain disabilities instead of efforts for the purpose of *normalization*. Against this backdrop, the dualistic and, therefore, problematic distinction between normal/abnormal would be avoided during medical evaluation, diagnosis and treatment processes.

One medical treatment based on the new concept of health is the cybernic treatment using Hybrid Assistive Limb (HAL). The well-known robotics scientist Sankai Yoshiyuki and my clinical team developed the cyborg-type HAL as a new treatment device for gait impairment. This treatment is based on *Cybernetics*, a term coined by Sankai referring to the disciplines of Cybernetics, Mechatronics, and Informatics. More precisely, *Cybernetics* is an emerging field of assistive technology, which aims at connecting robots physically and electrically but non-invasively with humans. Our research group performed a randomised clinical trial (NCY-3001) for gait treatment in patients with incurable neuromuscular diseases to test the efficacy and safety of cybernic treatment using HAL in the most severely ill and vulnerable patients.

The cybernic treatment we provide can enhance intention-based functional regeneration of the neural synaptic network, and would be combined with drug, gene and stem cell therapies to achieve the maximum improvement effect. This combined therapy would be revolutionary one in near future, and has the potential for treatment in all *voluntary movement disorders*. Moreover, because the employment of HAL is regarded as medical treatment, it is not an approach that is beyond therapy nor transhumanism. On the contrary, it helps patients actively and intentionally adapt themselves to their medical conditions or disabilities. In other words, we argue that the patients’ subjective evaluations should be strengthened as evidence of adaptation and improvement of symptoms as patient-reported outcomes (PRO) instead of referring only to objective criteria during the process of clinical evaluation of new medical products.





## A technology-based approach to ALS patient care

Yumiko Kawaguchi, Director of the Japan ALS Association (JALSA)

### ABSTRACT

ALS (amyotrophic lateral sclerosis) is a neuro-degenerative disease of unknown cause that occurs in four or five out of every one hundred thousand people. Within a few years nerves are lost throughout the body, the muscles that control breathing are affected, and the patient dies. Nursing care is required for all daily activities including feeding and toileting, so the burden on the patient's family is extremely heavy. Despairing patients seek euthanasia or physician assisted suicide without waiting to die naturally, which has been addressed in the German film *Hin und weg* (2014) as well.

In Japan, however, many patients use mechanical ventilation to greatly extend their lives. It is possible for them to choose to go on living because most of the costs of treatment and nursing care are provided by the state, and as a result it is not unusual for Japanese patients to still be alive twenty years after diagnosis. The result of studies on improving the Quality of Life (QOL) of ALS patients have also shown that there are patients who obtain a high quality of life, live at home, and even go back to work. Recently robots have begun to be used in rehabilitation, and highly functional communication devices are being developed. The current situation is therefore one, in which these patients are able to attain a surprising degree of independence.

My mother was diagnosed with ALS in 1995. I wrote about the experience of looking after her (including the various things I had to learn in order for her to continue living at home while being connected to medical devices), and this book was awarded the *Sōichi Ōya Nonfiction Award* in 2009. It was praised for its unique perspective of affirming survival through the merging of machines and the body.

In chapter Two and Three of this book “*逝かない身体*” (*Ikanai shintai*, in English: “The Body still Breathing”), I discuss how the connection (fusion) of body and machine can be welcomed. Moreover, I elaborate on the kind of mental preparation and attitude required to enable this acceptance of technology in the patient's life to endure. I also reflect on what those of us, who do not have direct experience of either the disease or the technology in question, must take into consideration on a daily basis when taking care of people living with a mechanical ventilator. Drawing on experiences of taking care of my mother, who was suffering from ALS, I talk about the ways of thinking and approaches needed to maintain a satisfying relationship between body and machine.



DIJ WORKSHOP  
HUMANS & MACHINES IN MEDICAL CONTEXTS:  
CASE STUDIES FROM JAPAN

## Manufacturing radiation: Radiological machines and managers in Pre-War Japan

Shi-Lin Loh, Harvard University  
Postdoctoral Fellow, D. Kim Foundation for the History of Science and Technology in East Asia  
Visiting Researcher, Keio University

### ABSTRACT

Numerous controversies in Japan surround the exposure of Japanese bodies to ionizing radiation after 1945, of which the Fukushima nuclear meltdown is only the most recent. Medical radiation lies in the background of the more sensational accidents linked to nuclear weapons and nuclear power generation. It is an avenue through which ordinary Japanese people encountered ionizing radiation long before the atomic bombings. Medical radiation today, moreover, has become part of a standard infrastructure of contemporary healthcare. X-ray machines are the earliest instantiation of medical radiation technology, gaining traction in the field of modern Western medicine in Japan by the early 20th century. However, what lies behind the production of an emergent medical specialty? What enables a *rentogen kikai* or *sōchi* (literally “Röntgen apparatus”) to be used for medical purposes? Besides medical practitioners and patients, manufacturers and technicians deserve equal consideration as actors implicated in networks of medical technologies. This paper analyses the machines and managers of radiology by discussing the activities of the Shimadzu Corporation in Japan c.1900 to 1945. Shimadzu was a major Japanese manufacturer of X-ray machines and a key actor in producing a class of technicians in Japanese radiology. This paper provides a historical analysis of archival sources from company publications, as well as newspaper and medical journals, to show that the Shimadzu company were crucial to making and institutionalising *rentogen* or X-rays as an orthodox part of medical practice in Japan.



## Establishing a dosimetry system for ionizing radiation: The role and agency of measuring instruments and atomic bomb survivors

Maika Nakao, Ritsumeikan University

### ABSTRACT

The effect of low-level ionizing radiation on the human body has been a serious problem in Japan after the nuclear accident in 2011, particularly the level of acceptable risks to individual doses of radiation. Consequently, the controversy is still ongoing which level of exposure can be considered as safe/risky to the human body. Since its discovery, radiation has been visualized, generated, measured and controlled by various devices and instruments such as radiation detectors, particle accelerators and radiation therapy machines. Along with using these devices and instruments, there have been varying attempts to determine the permissible dose of radiation. Nevertheless, the dosimetry system, which is the calculation of the absorbed dose in tissue resulting from exposure to ionizing radiation, had been established only after the infamous atomic bombing of Hiroshima and Nagasaki, where a huge number of citizens was harmed and killed.

Since then, American and Japanese scientists collected data of atomic bomb survivors (*hibakusha*) and tried to classify the absorbed dose of radiation. They introduced different dosimetry systems such as T65D, DS86, and DS02 based on and shaped by the underlying instruments and technology. This leads to the question how these dosimetry systems were actually established, stabilised and how Japanese and American scientists collaborated to establish these systems. The paper analyses how the various measuring instruments and technology has contributed to the knowledge production regarding ionizing radiation. Moreover, the paper analyses the role of atomic bomb survivors as they were subjective agents to shape the knowledge. Thus, the paper approaches the process of knowledge production on ionizing radiation and its generation from an historical perspective. By using both Japanese and American scientific records and reports, this paper also discuss the politics and culture behind the instruments and technologies.

## LIST OF SPEAKERS

**Altenstetter, Christa**, Ph.D., an expert in comparative public policy, health policy, and policy-making in the European Union, has devoted most of her research to health care reform and regulation of medical technology from a comparative perspective. She holds a Ph.D. from Heidelberg University, was a postdoctoral fellow at the John F. Kennedy School at Harvard University, directed a research project at the School of Public Health at Yale University, served on the research staff of several American and European Research Institutes, and has frequently worked as a consultant to health authorities abroad. Among her publications are: *Medical Technology in Japan. The Politics of Regulation* (2014), *Medical Devices: European Union Policymaking and the Implementation of Patient Health and Safety in France* (2008), “Medical Device Regulation in the European Union, Japan and the United States: Commonalities, Differences and Challenges,” *Innovation. The European Journal of Social Science Research*, Vol. 25(4): 362-388. She is co-editor of *Health Policy Reform, National Variations and Globalization* (1997) and *Comparative Health Policy and the New Right. From Rhetoric to Reality* (1991).

**Brucksch, Susanne**, Dr., is senior researcher at the German Institute for Japanese Studies (DIJ) Tokyo, member of the Social Science Section and Co-organiser of the Social Science Study Group. From 2009-2016, she has been working as senior research fellow at Freie Universität Berlin and was visiting researcher at Waseda University in 2016 collecting data for her current research on «Technical Innovation and Research Collaboration in Japan: The Biomedical Engineering Sector». Before, she spent two years in Japan with a MEXT and DIJ scholarship conducting research for her dissertation on *Environmental Collaboration between Business Companies and Civil Society Organisations in Japan* (2011). She also holds post as member of the board and Technik-STS Section leader of the German Association for Social Science Research on Japan (VSJF). Her research interest reaches from Innovation Studies, Science & Technology Studies (STS), STI (Science, Technology & Innovation) Governance, Inter-organisational Collaboration, Institutional Design as well as Civil Society.

**Kawaguchi Yumiko**, Ph.D., has been the Director of Japan ALS Association since 2005, the Director of ALS/MND Support center SAKURA since 2004, where she is engaged in nationally designated training programs and initiated programs to train caregivers specializing in ALS care. Besides, she has been taking position as president of the home-care service company MOMO since 2003 in order to dispatch caregivers to ALS patients receiving mechanical ventilation treatment in their homes. At present, this company employs 60 caregivers and provide round-the-clock care to ALS/PVS/disability people. Among her publications are: 逝かない身体 (*Ikanai shintai*, in English: “The Body still Breathing”), which addresses the value of the lives of ALS patients through an account of the 12 years spent caring for her mother at home. This book was awarded the 41st *Sōichi Ōya Nonfiction Award* in 2009 (the most prestigious literary prize awarded to works of non-fiction in Japan). Her current fields of interest lies on Medical sociology, Medical Ethics, and Medical Anthropology.



DIJ WORKSHOP  
HUMANS & MACHINES IN MEDICAL CONTEXTS:  
CASE STUDIES FROM JAPAN

**Loh, Shi Lin**, Ph.D., is a postdoctoral fellow with the D. Kim Foundation for the History of Science and Technology in East Asia (2016-2017). Currently she also holds a visiting researcher position at Keio University, where she is a member of Prof. Suzuki Akihito's working group on the History of Medicine. Based in Japan since 2013, she previously held visiting researcher posts at The University of Tokyo and Waseda University while undertaking her dissertation fieldwork and writing. From 2013-2014 she was a Japanese Studies Fellow with the Japan Foundation and from 2014-2015 a recipient of the 125<sup>th</sup> Annual Junior Visiting Scholar Fellowship from Waseda University. Originally from Singapore, she completed her higher education in the United States. In 2016 she earned her Ph.D. at Harvard University with a dissertation on *Irradiated Trajectories: Medical Radiology in Modern Japan*, for a degree in the field of Modern Japanese History, with a secondary focus in Science and Technology Studies.

**Mikami Koichi**, Ph.D., is currently a visiting research fellow at Science, Technology and Innovation Studies (STIS), University of Edinburgh (UK), working for the medical history research project *Making Genomic Medicine* (P.I. – Prof. Steve Sturdy) funded by the Wellcome Trust. In this four-year research project, which aims to engage critically with key issues in modern medicine by undertaking of socio-historical investigations into the development of medical genetics in the second half of the twentieth century and that of genomic medicine over the decade or so, he is responsible for a research strand entitled 'The Rise of Rare Diseases'. His ongoing study focuses on the roles of patients and their families and patient organisations in organising and shaping rare diseases research and policy since the 1990s and also the impact of their active involvement in research and policymaking on the distribution of rights and responsibilities among various stakeholders.

**Morioka Masahiro**, Ph.D., is a professor at Waseda University, Japan. He teaches philosophy and ethics. His specialties include Philosophy of Life, Bioethics, Gender Studies, and Civilization Studies. He was born in Kochi Prefecture, Japan, in 1958. He graduated from The University of Tokyo and worked for the International Research Center for Japanese Studies and Osaka Prefecture University before he came to Waseda. He is considered by many to be one of the leading philosophers in the current Japanese philosophical community. His books include: Masahiro Morioka, (ed.). *Reconsidering Meaning in Life: A Philosophical Dialogue with Thaddeus Metz*. Journal of Philosophy of Life. (2015 in English); *A Philosophical Inquiry into Personhood, Dignity, and Brain Death*. Kinokopress. (2015 in Japanese); *Manga Introduction to Philosophy*. Kōdan Sha. (2013 in Japanese); and many more.

**Nakajima Takashi**, MD & Ph.D., is a Neurologist at the Niigata National Hospital. He graduated from Niigata University, School of Medicine (1983), became a resident and research fellow of the Brain Research Institute, Niigata University (1983-1984), and attended the Ph.D. program of Niigata University (1985-1991). Besides, Nakajima joined as Fogarty Fellow the National Institute of Mental Health, NIH (USA), 1987-1989. He hold position as chief of department of neurology, radiology and clinical research, Saigata National Hospital (1991-2003), Member of MHLW pharmaceutical, medical device and



DIJ WORKSHOP  
HUMANS & MACHINES IN MEDICAL CONTEXTS:  
CASE STUDIES FROM JAPAN

food committee (2001-2004). Since 2004, Nakajima has been functioning as Deputy Director of Niigata National Hospital, National Hospital Organization, outside lecturer of the Brain Research Institute, Niigata University, and outside specialist of the Pharmaceuticals Medical Devices Agency (PMDA). His main research areas are Neurology, Neuro-rehabilitation, Biomedical Informatics, Patient Reported Outcome / QOL (Quality of Life), Clinical Study Design, Nambyo / palliative care. He is a member of various medical societies such as Japanese Society of Neurology (Delegate, Specialist, Instructor), Japan Society for Dementia Research (Specialist), The Japanese Society of Internal Medicine (Certified physician), and Japanese Society for Genetic Counselling (Specialist on medical genetics).

**Nakao Maika**, Ph.D., is a historian of Science and Culture. She received her Ph.D. in History of Science from The University of Tokyo (2015). Her book 『核の誘惑: 戦前日本の科学文化と「原子力ユートピア」の出現』 (*Kaku no yūwaku: Senzen Nihon no kagaku bunka to “genshi-ryoku yūtopia” no shutsugen*, in English: “Allure of Nuclear: Science Culture in Prewar Japan and the Emergence of ‘Atomic Utopia’”) was published in 2015 by Keisō Shōbō. She has produced the documentary film “Memories of the Kyoto Cyclotron”, which was awarded a prize at the 50th Science and Technology Film/Video Festival (2009). She is currently working on the Cultural History of Radiation in Japan before and after the emergence of the atomic bomb.

**Sasaki Kaori**, Ph.D., is an associate professor at Otaru University of Commerce. As a sociologist, her main interest is the ways in which bio-politics over humanity have shaped and reshaped alongside of the (cultural) identity politics. She has recently launched a research plan, exploring the impact of Japanese adoption of electronic patient records and medical record clerks upon hospital workers including nurses and radiologists. It derives from her previous project about the public understanding of electronic patient records in the UK. In addition to this subject, she has continuously researched on changing the definition of human life and death in connection with the development in transplant medicine.

**Shiroshita Yuji**, was awarded an LL.D. degree (1990), an LL.M. degree (1985), and an LL.B. degree (1983) from Hokkaido University. He became associate professor of Criminal Law at Sapporo Gakuin University in 1990. Hereafter, he continued his academic career as member of faculty at the Faculty of Law (1997-1998), and as visiting scholar at Wolfson College (1997-1998), University of Cambridge. In 1997, Shiroshita was also appointed as professor of Criminal Law at Faculty of Law, Sapporo Gakuin University. He continued his academic pursuit as professor of Criminal Law at Meiji Gakuin University in 2002, and from 2008 to present as professor of Criminal Law at Graduate School of Law, Hokkaido University. Moreover, Shiroshita received a visiting scholarship from Aug to Oct, 2016 at the Centre for Law, Medicine and Life Sciences, Faculty of Law, and at the Wolfson College, University of Cambridge. His research interests covers Medical Criminal Law, Sentencing Theory, Criminal Attempt as well as Criminal Responsibility. Among his main publications are: *Recent Issues on Sentencing Theory (Enlarged Edition)*, Seibundoh, 2009 (Chinese Translation, Law Press/China, 2016), the editorship of *Legal Issues on*





DIJ WORKSHOP  
HUMANS & MACHINES IN MEDICAL CONTEXTS:  
CASE STUDIES FROM JAPAN

*Living Donor Organ Transplantation*, Nippon Hyoron-sha, 2009; *Recent Issues on Sentencing Theory*, Seibundoh, 2007; and *Study on Sentencing Guidelines*, Seibundoh, 1995.

**Spoden, Celia**, Dr., started working as a research associate and lecturer in the Department of Modern Japanese Studies at Heinrich Heine University Düsseldorf (HHU) in April 2008. Here, she studied Modern Japanese Studies and Philosophy, and obtained her Ph.D. in 2014, with an empirical study about *Living Wills in Japan* and why people reject life-sustaining treatments. In her thesis, she also dealt with the development of bioethics in Japan and its relation to the international debates with a focus on the emergence of the “right to die” movement and its opponents. Furthermore she has reconstructed how the expression “death with dignity” (*songenshi*) was translated into Japanese and became closely connected with the idea of Living Wills and euthanasia. Her dissertation was published in 2015. In April 2016 she has received a Canon Foundation Europe Fellowship for her current research on social participation of patients with amyotrophic lateral sclerosis (ALS) in Japan, and the medical usage of robot technology.

**Suzuki Akihito**, Ph.D., is a professor of History at School of Economics of Keio University in Tokyo. He studied History of Science at the University of Tokyo and History of Medicine at the Wellcome Institute for the History of Medicine in London. He has published extensively on History of Psychiatry in England and Japan, as well as on the history of infectious diseases in Japan. His publications include: *Madness at Home: The Psychiatrist, the Patient and the Family in England 1820-1860* (Berkeley: University of California Press, 2006) and “Measles and the Transformation of the Spatio-Temporal Structure of Modern Japan”, *Economic History Review*, 62 (2009), 828-856 and “Smallpox and the Epidemiological Heritage of Modern Japan: Towards a Total History”, *Medical History*, 55 (2011), 313-318. He is now preparing a book on mental illnesses in early twentieth-century Tokyo based on an extensive archive of a private psychiatric hospital, which will examine psychiatrists and patients in the contexts of the rise of modernity and the persistence of tradition.

**Tanishita Kazuo**, Ph.D., is a visiting professor at the Research Organization for Nano & Life Innovation, Waseda University, and professor emeritus, Keio University. He was awarded a B.S. degree in Mechanical Engineering from Keio University in 1969, a M.S. degree in Production Mechanical Engineering from Tokyo Institute of Technology in 1971, and a Ph.D. degree from Brown University in 1975. Hereafter, he worked as research associate at the Tokyo Women's Medical College and has been continuing his academic career as assistant professor (1981), associate professor (1984), and full professor (1992) of Mechanical Engineering at Keio University. In 2000, he became an invited professor at the Université de la Méditerranée Aix-Marseille II in France. After his emeritation in 2012, he changed to the Research Organization for Nano & Life Innovation, Waseda University. His current research interest are Biomedical Engineering, Biomechanics as well as medical device development. He received many awards due to his significant contribution to the field of biomechanical engineering.