



# Public Innovation and Emerging Technologies in Health and Social Care across Japan and Europe

21 October 2019 | 10.00 to 5.00  
EHESS, Room 737 (7<sup>th</sup> floor)  
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Public innovation policy plays a key role in the development and implementation of new technologies in health and social care. In the context of escalating challenges presented by aging populations and increasing numbers of people living with chronic diseases, governments in Japan and Western Europe are having to make strategic decisions about allocating resources to promising but often relatively untested new care technologies, including assistive and rehabilitative devices (e.g. smart walkers, exoskeletons), social robots (e.g. Paro, Pepper), tablets (e.g. iPads), AI-enabled voice assistants (e.g. Amazon Alexa, Google Assistant) and care-related apps, to name a few. A surge of new devices entering the care marketplace is introducing vast complexity related to technical issues such as big data, the internet of things (IoT), infrastructure (broadband and 5G), compatibility, standardisation, maintenance, as well as ethical concerns around safety, data security, privacy/surveillance, digital divides, dehumanisation and impacts on jobs and work in care fields – to say nothing of defining and evaluating efficacy.

This workshop will explore some of the ways in which states are negotiating the changing technology landscape in health and social care.

# Programme

## 10:00 | **Opening Remarks**

Sébastien Lechevalier (EHESS, CCJ-FFJ)

## 10:10 | **Contrasting the development and implementation of robots for the care of older adults in Japan and Europe**

James Wright (EHESS, FFJ)

This presentation will explore some of the similarities and contrasts between Japanese and European approaches to the development and introduction of care robots. Faced with aging populations, increasing levels of care need, and difficulties recruiting and retaining enough care workers, both Japanese and EU governments have pursued large, publicly funded research projects to develop and commercialise care robots over the past decade. Most notable are Japan's 2013-2017 €106m "Project for the development and promotion of the introduction of robot care devices", and the European Commission's 2014-2020 €85m program "Robotics for Ageing Well".

In both cases, there is a disconnect between a relatively well-funded top-down approach to research and development, and a bottom-up approach to implementation whereby decisions about the actual purchase of robotic devices are made at the local level with relatively little technical guidance or financial support. This disconnect, together with significant broader problems of lack of end user engagement in the development process and high product cost, goes some way towards explaining the relatively low uptake of care robots in Europe or Japan to date.

However, there have also been significant differences in the focus of these national and supranational innovation projects. While the overwhelming focus of European robotics projects has been the development of devices to support independent living, Japanese development projects have focused more on robotics to support residential nursing care. This difference in approach surfaces contrasts in the historical development of care infrastructures, alternative problematisations of aging which are elided in the universalising rubric of "aging populations", as well as differing understandings and expectations of care – and the role that technologies such as robots should play in its current and future delivery.

## 10.50 | **Taking Care of the Robot: A Field Study of a Dementia-Prevention Robot Class in South Korea**

Heesun Shin and Chihyung Jeon (Korea Advanced Institute of Science and Technology)

Silbot is a "dementia-prevention robot" developed by Korea Institute of Science and Technology (KIST) in 2008. The robot, by offering cognitive exercises, is expected to help the elderly prevent dementia. Recently, Silbot has been utilized in several healthcare centers in South Korea, as a part of the government's agenda, according to which robots will support independent living and social activities of the elderly. Robots for elderly care are on the priority list for emerging future technologies in South Korea.

In this presentation, we analyze the use of Silbot in a regional health center in South Korea. From our on-site observation of the Silbot's "Brain Training Health Classes" in a regional healthcare center and interviews with the instructor and the robot's developers, we claim that the efficacy of the robot class relies heavily on the work of the human instructor. The instructors helped both Silbot and the elderly students by employing characteristic verbal tones, bodily movements, and other pedagogical tactics. Only after the instructor took up diverse roles as users, mediators, and assistants of the robot, the Silbot could maintain its role as a dementia-prevention teacher. Contrary to the prevailing expectation towards robots as capable of performing one-on-one interaction with the elderly students, our field study suggests that the technocultural experiment of using robots for elderly care was upheld by three-party interaction between the instructor, the robot, and the students. Therefore, we argue that any success of such robot programs requires a deeper understanding of the spatial and human context of robot use, including the role of human operators or mediators, and that this understanding should be reflected in the design, implementation, and evaluation of robot programs.

## 11.30 | *Coffee Break*

## **11.45 | Do Socially Assistive Robots Improve Quality of Life among Older People in a Nursing Home?**

Naonori Kodate (University College Dublin)

The potential benefits of emerging technologies (robotics and AI) in health and social care have been widely highlighted in Japan, Europe and beyond. While some positive effects of robotics-aided care on older people have been reported, the impacts of using such technologies in care settings have not been sufficiently evaluated, particularly experience and perceptions among and usefulness to middle and end users. With a particular focus on socially assistive robots in nursing home settings, the presentation will report results from our recent studies examining the impact of communicative robots on residents and care professionals in Japan. The presentation will also discuss ongoing international projects, investigating perceptions towards care robots in different jurisdictions and a future plan for testing verbal and non-verbal robots in care homes in Ireland and Japan.

The studies to be presented are based on the work of (international and Japanese-only) multidisciplinary research teams involving social and life scientists, engineers, and practitioners. The role of social scientists in this type of research and cross-national collaborations, and the questions around methodologies will also be presented as topics for discussion. The research has been in part supported by the Japan Agency for Medical Research and Development, the Japanese Council of Senior Citizens Welfare Services, the Japan Keirin Autorace Foundation, the Pfizer Health Research Foundation and the Toyota Foundation.

**12.25 | Lunch**

## **2.00 | Social Robots in Elderly Care: The Turn toward Emotional Machines in Contemporary Japan**

Anne Aronsson (University of Zurich)

As a hyper-aging society, Japan has one of the highest life expectancies in the world and is undergoing a demographic transition that Western nations have yet to experience. Japanese authorities are hoping that robots will make up the difference, and have adopted an agenda of increasingly introducing social robots to assist in the work of caring for the elderly. Japanese society is increasingly experiencing the phenomenon of people becoming emotionally attached to anthropomorphic machines, such as social robots. The Japanese government is encouraging robotic solutions to a shortage of labor for elderly, but the introduction of social robots in the realm of care can be perceived as highly contentious. As social robots proliferate in the domain of elderly care, we need to seriously consider the implications of what makes us human by developing a more self-aware relationship with these devices, with each other, and with ourselves. In exploring the human engagement with social robots within the context of care, this presentation argues that introducing emotional technologies into the equation of care neither provides the same kind of experience as human-human interaction, nor is necessarily psychologically deceptive, but rather gives rise to something new.

## **2.40 | EMOTIONAL ROBOTS: Limits and Possibilities of Affective AI in Health and Social Care**

Giulia De Togni (University of Edinburgh Medical School)

Emotional robots are designed to affect the mental and emotional states of humans, as sociable machines that are equipped with computational systems designed to create a conduit for emotional 'touch' and intimacy with their users. I explore the impact of the human-machine relationship on traditional family and society structures, and question whether the development of robots to take over tasks currently performed by humans in caring roles may eventually disrupt social bonds (kizuna), leading to a more or less substantial reduction of human contact for those people being cared for. To prevent negligence and social isolation from happening, society will need to introduce new standards and laws that ensure that emotional robots do not replace, but only augment, human caregiving.

**3.20 | Coffee Break**

### 3.30 | **Who is Holding the Webcam?: The Invisible Labor of Caregivers in South Korean Telemedicine Practices**

Sungeun Kim and Chihyung Jeon (Korea Advanced Institute of Science and Technology)

This presentation analyzes the hidden yet significant role of caregivers in providing medical care at a distance. In South Korea, telemedicine has been promoted as a plausible solution to cope with rapidly aging population, shrinking rural regions and the severe lack of local medical personnel. It is expected that the development of telemedicine systems will replace caregivers at remote medical facilities with webcam-based online sessions by doctors at a distance. This paper examines such technological possibility through multisited fieldwork on three telemedicine test sites in South Korea: a rural village with minimum care facilities, a suburban town of decreasing population, and correctional facilities lacking medical personnel. Each site was testing out telemedicine systems under specific technological and social configuration. Contrary to the widespread belief that telemedicine will substitute local labor, actual telecare systems require local caregivers to perform new and diverse roles in between doctors, patients, telecommunication devices, and medical authorities. These practices include 1) gathering medical records and health information of remote patients, 2) operating, supplementing, and maintaining telecommunication devices, 3) coordinating and planning online sessions ahead of time, and 4) conducting additional paperwork to abide by legal requirements. In order for a telecare system to work, caregivers must learn to become sociotechnical mediators who amend often neglected gaps within the telemedicine infrastructures. While previous discussion primarily focused on the technological availability as critical factor for the success of telecare (i.e., accuracy of sensors and security of medical data), this study centers upon the significance of local caregiver in reconfiguring the physical and affective distances of care work. The study suggests that telemedicine can be enacted, not simply by eliminating the distance between patient and remote doctors, but by creating new sociotechnical collaboration between actors with emergent roles and practices.

### 4.10 | **“Robolution” in Care: The Rationale and Realities of Ethical “Co-Conception” and “Adoption” of Care Robots in France**

Martin Chevallier (EHESS)

The majority of French start-ups in the field of socially interactive robotics and many national academic projects aim at providing healthcare “solutions” for elderlies, especially those depicted as physically or/and cognitively degenerating and deprived of social ties, through innovative apps implemented on “cute” platforms (Buddy, Nao, Pepper, Cutii...). Interestingly, many of these robots have been repurposed, from companions providing fun and services to every member of the family to care assistants for a narrow audience of elderlies and autistic children, and from personal and autonomous care providers at home to semi-autonomous therapeutic tools for the staff of elderly care homes (mostly EHPAD and retirement homes). This presentation will focus in detail on this massive repurposing and the emergence of a claim for an inclusive and ethical “co-conception” involving every stakeholder, and especially final users, as soon as possible, examine the political background and incentives sustaining the testing and implementation of care robots – promises of sustainable and “rehumanized” workload for the staff, prestige and avant-gardism for innovative care homes, and cost-efficient transition for the healthcare system at large. Finally, it will discuss the concept of “adoption” as essentially misleading to describe scarcely perennial trials that involve *certain* final users and professionals and to account for a trend towards less frequent use over time. Far from being exponential and self-evident as many innovators take for granted, the “robolution” of care in France is very slow, non-linear, and arguably, hardly addresses the needs care providers expressed during recent and large-scale protests, *i.e. more funding, more (human) staff and less profit motive “on the back of seniors”*.

### 4.50 | **Concluding Remarks**

# Speakers



## Anne Aronsson

Dr. Anne Stefanie Aronsson is a postdoctoral fellow at the Institute of Asian and Oriental Studies at the University of Zurich. Dr. Aronsson is a socio-cultural anthropologist with a PhD from Yale University. She conducts research on elderly care in hyper-aging Japan and how the introduction of emotional technologies embedded in social robots affect the dynamics of care.



## Martin Chevalier

After achieving a master degree of philosophy at Paris Sorbonne University and another of history of science and technologies at Centre Alexandre Koyré (EHESS), Martin Chevallier began a thesis of sociology with a PhD contract (2018-2021) at Centre d'études des mouvements sociaux (CEMS-EHESS), under the supervision of Claude Rosental. The purpose is to link the implication of the innovators and other “experts” of social robotics in the management of psychosocial risks associated with social robots, their role in the definition of politics of innovation at national and european level, and the multiplication of full-scale tests and experimentations with dependant users, in living labs or shops, which will be subject to a multi-located ethnography. He argues that these efforts converge to produce “acceptable” and “ethical by design” robots and that the backing of this innovation by embedded social scientists is one of the core element of this emerging model of the regulation of relations between science and society, renewing the devices of technical democracy and participation.



## Giulia De Togni

Giulia De Togni (デ・トニイ、ジュリア) is a postdoctoral research fellow based at the University of Edinburgh Medical School. For her current research project “Artificial Intelligence and Health” (2019-2020, funded by Wellcome Trust), she focuses on the affective aspects of how AI is developed and how it is or will be integrated into care practice. In particular, she critically interrogates the social context and implications of human-technology interaction in the inter-relational sphere of health and social care. In the past ten years, Giulia carried out ethnographic studies of science and technology, engaging with discourses on global health, epigenetic debates, new technologies, and human rights. She conducted fieldwork and archival research in Japan, Italy, France, and the United Kingdom supported by the British Arts and Humanities Research Council, and Japan’s Ministry of Education, Culture, Sports, Science and Technology.



## Chihyung Jeon

Chihyung Jeon teaches STS and history of technology at the Graduate School of Science, Technology, and Policy of KAIST, South Korea. He is interested in the historical and social relationship between humans and technologies and has recently been studying cultures of AI and robotics in South Korea.



## Sungeun Kim

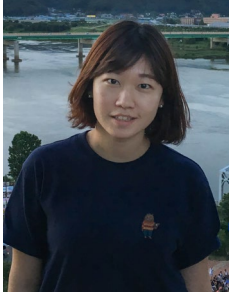
Sungeun Kim received his B.S. in Chemistry from Korea Advanced Institute of Science and Technology (KAIST) and is currently a Ph.D. candidate at Graduate School of Science, Technology, and Policy in KAIST. His current research interests include technologies for remote sensing, politics of infrastructures, and cultures in telecommunication, especially in South Korean telemedicine practices.



### **Naonori Kodate**

Kodate, Naonori (PhD) is Associate Professor in Social Policy at University College Dublin, Ireland. He is also affiliated to Hokkaido University's Public Policy Research Centre, the University of Tokyo's Institute for Future Initiatives, UCD Geary Institute for Public Policy and the Universal Accessibility & Ageing Research Centre, Japan. He was previously a researcher at NIHR King's Patient Safety and Service Quality Research Centre, England. His main research interests include the use of eHealth (e.g. home care robots) in older people's care, patient safety, and gender equality in STEM education in different cultural settings. Nao is currently the Principal Investigator of a two-year, Toyota Foundation-funded international research project "Harmonisation towards

the establishment of Person-centred, Robotics-aided Care System (HARP: RoCS)", working with teams in Ireland, Japan, Hong Kong and France.



### **Heesun Shin**

Heesun Shin is a Ph.D. candidate at Graduate School of Science, Technology, and Policy in KAIST. She is interested in human-robot relationship, especially how robots reconstitute human values and social norms. She is participating in a research project titled "Cultures of Robotics in South Korea and Europe" funded by National Research Foundation of Korea.



### **James Wright**

James Wright recently completed his PhD in anthropology/science and technology studies at the Hong Kong Institute for the Humanities and Social Sciences at the University of Hong Kong. His research focused on the development and implementation of care robots in Japan, and his broader interests include robotics, AI and algorithms, welfare technologies and public innovation policy.

His publications include "Tactile care, mechanical Hugs: Japanese caregivers and robotic lifting devices." *Asian Anthropology* 17 (1): 1-16, 2018.

His research project as the 2019 CEAFJP/Michelin Fellow will utilise the case study of care robots in Japan to examine some of the most pressing questions in contemporary developed societies increasingly dominated by science and technology: why do public innovation policies succeed or fail? What factors between the creation of policy and its implementation, between the techno-imaginary and the reality of technology use, intervene to reconfigure and repurpose state ambitions of national innovation?