

## 7. Background of Research

**Project title:** Gender and Sexuality Aesthetics in Humanoid Robots

I research in the areas of art, design and robotics, informed by gender studies and the anthropology of technoscience (STS/FTS). It spans Art, Humanities, and the Engineering and Social Sciences. My inter-media case studies focus on perception, aesthetics and ethics as built into humanoid technologies. I have built a pioneering, materially-engaged analysis of the aesthetic evolution of the service gynoid. In the 4 years prior to the Postdoc I staged public experimental work in the areas of the ‘uncanny valley’, Japanese gynoid robots and love doll design and use. During the period of the Postdoc, I presented this past research and artwork in Tokyo in a solo exhibition at Gallery Hashimoto in June 2018.

More on the background of the research can be read in this interview profile with Waseda University: <https://www.waseda.jp/top/en-news/62492>

## 8. Research Methodology

Working with Prof Watanabe of the Watanabe Lab in Department of Intermedia Art and Science, I created outlines for several innovative, interdisciplinary art-experiments involving current Japanese robots. Then, because the projects require the use of newly-developed robots, we set about gaining access to the appropriate robots and technologies.

During the period of the Postdoc, the robots that we had previously used became unavailable. However, I was instead privileged to be offered the chance to work with “Alter”, an artificially intelligent humanoid designed by Ikegami Lab (University of Tokyo) and Ishiguro Laboratory (Osaka University). This chance was also made possible by Watanabe Lab’s residence in the Miraikan museum as an ongoing research project Implicit Processes of Mind and Brain Project. This project investigates implicit and automatic processes in human-machine and human-human interactions by measuring unconscious cognitive processes, body movements, physiological and neural responses.

I designed a new museum-based art-science exhibit wherein participants across the world

could interact with Alter via webcam, learn facts about the robot, answer our research questions, and digitally receive a short sound artwork created and performed by the robot in real time. The artwork takes the form of an abstracted “omikuji” or “fortune” and is delivered to the user via email from the prototype application I created to work with the robot’s “brain”. The project has a webpage here: <http://www.elenaknox.com/omikuji.html>

In line with my Postdoc’s initial aims, the experiment gathers cross cultural and cross generational data by reaching a very wide participant sample — visitors to museums and festivals that invite the artwork to be shown. The demographics are only accessible to us through museums’ own records and data-gathering, because use of our interactive application is anonymized. The non-laboratory conditions are acknowledged: it is not possible to keep the data completely clean, however the very large number of participants means we can assess general trends and quantities.

To offset these challenges, we also have participants voluntarily complete two written surveys which can be correlated. The application interface and the surveys are always presented bilingually, in English and the native language of the country in which the questions are asked.

The questions are based on test instruments to measure people’s perception of robots (Bartneck 2008). They address stereotype, uncanniness, animacy and anthropomorphism. When the experiment finishes its 2018 season, these will be analysed and published via my ongoing collaboration with Watanabe Lab, and Dr Kohei Ogawa of Osaka University.

Alter is an androgynous robot. Therefore not many questions relating to robot sex and gender were feasible. A follow-up study is planned that can examine these questions, using the gendered Kouka-bot, also from Osaka University. This investigative focus is being implemented later than was anticipated, but it builds on the relationships and collaborations fostered during the Postdoc and the *Omikuji* project.

## 9. Results/impacts

Note: As much as possible, describe the contents and results of your research in a manner that is easily

understandable to a non-specialist in your field. Provide a concrete description if (1) papers related to your work have been published in major academic journals, (2) particularly outstanding research results were achieved, or (3) patent applications have been made or other tangible outcomes achieved through the research.

The *Omikuji* experiment has been so popular that it is still running! It has been in major cultural institutions in Seoul Korea; Beijing China (twice), Hangzhou China (organized by China Academy of Art), and is currently in Suzhou China (see webpage for more detail). In December/January 2018 it is invited to the Art Machines: International Symposium on Computational Media Art at City University Hong Kong, for a 2-week installation. After that it will go to Shanghai and Shenzhen. It has been written about in media such as *Vogue*, China; *Wallpaper Magazine*; and I have been interviewed on China Central Television (CCTV) about it.

*Omikuji* became the main focus of the Postdoc because of its uptake and success internationally. This kept me extremely busy. Other research goals were worked towards, with outcomes yet to be concretized. They include the video work outlined in the initial proposal—I have conducted field research at *ningyou kuyou* and other locations, and begun filming this project—and the related book project. Both will eventually be published with JSPS acknowledgement.

I have written a chapter for a forthcoming edited book based on my ethnographic research into robot funerals. It will be published in 2019. I have also given many presentations on this and related topics [see Section 10].

## **Publications**

Articles describing the research were published in the journals *Design Ecologies* (Intellect Books) and *Studies in Theatre and Performance* (Taylor & Francis).

In total I gave 6 conference presentations on the research, including two at world-leading robotics conferences: *26th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN2017)*, in Lisbon, Portugal, and *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2018)* in Madrid, Spain, which was attended by the King of Spain.

10. Research Presentations during the period of the fellowship (Name of the conference, title, place, date)

### **Academic conferences**

*IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Madrid, Spain, 2 October 2018. Paper: Knox, E. & Watanabe, K. (2018) 'AIBO robot mortuary rites in the Japanese cultural context'.

*Symposium: Robots and Artificial Intelligence in Contemporary Japanese Society*, Sophia University, Tokyo, Japan, 10 June 2018. Presentation: Knox, E. (2018) 'Like a person: A gynoid speaks its mind'.

*Mechademia: Manga Nexus: Movement, Stillness, Media*, Kyoto International Manga Museum, Kyoto, Japan, 25 May 2018. Presentation: Knox, E. (2018) 'Young girl saves world'.

*17th Annual STS Conference Graz: Critical Issues in Science, Technology and Society Studies*, Graz, Austria, 7 May 2018. Presentation: Knox, E. (2018) 'Regular sex: On the prospective regulation of sex robots'.

*Symposium: AI Aesthetics and the Machine*, Okinawa Institute of Science and Technology, Okinawa, Japan, 8 January 2018. Presentation: Knox, E. (2018) 'Alter versus deep belief'.

*26th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, Lisbon, Portugal, 29 August 2017. Paper: Knox, E. & Watanabe, K. (2017) 'Ethical considerations of gendering very humanlike androids from an interdisciplinary perspective'.

### **Invited talks**

*Ultravirus Festival*, Sydney, Australia, 10 November 2018. 'Alter versus deep belief'.

NYU Shanghai, China, 29 March 2018. 'Like a person: A gynoid speaks its mind'.

Kanagawa University, Japan, 16 November 2017. 'Gendering very humanlike robots: An artist's perspective'.

*What Gender is Code?*, Goethe Institut, Beijing, China, 28 October 2017. 'Canny: Unpacking the fixations of the hive mind'.

*Cyberfeminism: Faceless Agency*, Goethe Institut, Seoul, Korea, 27 October 2017. 'Canny: Unpacking the fixations of the hive mind'.

*Human Meets Robot: A Talk Series on Social Robotics*, Japan Foundation, Sydney, 21 September 2017. 'Like a person: Humanoid robots in performance'.

### **Art museum and festival presentations**

#### **Solo shows**

*The Female is Future*, Gallery Hashimoto, Tokyo, 1–23 June 2018

*Snoösphere* (Lull Studio), The Big Anxiety Festival, UNSW Galleries, University of New South Wales, Sydney, 9 September–11 November 2017

## Group shows

*Algorithmic Art: Shuffling Space and Time*, City Hall, Hong Kong 2018  
 Beijing Media Art Biennale, *POST:LIFE*, CAFA Art Museum Beijing, Shanghai Ming Contemporary Art Museum (McaM), Shenzhen OCT Art & Design Gallery, Suzhou Hanshan Art Museum, and regional tour, China, 2018  
*9 Tomorrows*, PowerLong Art Center, Hangzhou, China, 2018  
*A Better Version of You*, Goethe Institut, 798 Art Zone, Beijing, China, 2018  
*I Must Confess*, Bangkok Biennial, Thailand, 2018  
 Festival Nuovo Cinema Europa, Genova, Italy, 2018  
 International Video Poetry Festival, Athens, Greece, 2018  
*Ex Machina* and featured short artist films, NYU Shanghai, China, 2018  
*Artificial Intelligence Art and Aesthetics Exhibition*, Okinawa Institute of Science and Technology, Japan, 2017-2018  
 8th Cairo Video Festival, Egypt, 2017  
*Video Vortex XI*, Kochi-Muziris Biennale, Kochi, India, 2017  
 Athens Digital Arts Festival, Greece, 2017  
*A Better Version of You*, Artsonje Center for Contemporary Art, Seoul, Korea, 2017  
 Les Femmes Underground International Film Festival, San Diego, USA, 2017  
 Richterfest, Moscow, Russia, 2017  
 Dublin Feminist Film Festival, Ireland, 2017  
 LA Underground Film Forum, Los Angeles, USA, 2017  
 Festival Silêncio, Lisbon, Portugal, 2017  
 Blue Magpie Experimental Film Series, Hsinchu City, Taiwan, 2017  
 Simultan Festival XII, *Possible Futures*, Timisoara, Romania, 2017  
 Video Art Experimental Film Festival (VAEFF), Tribeca, New York City, USA, 2017  
*Refugee!*, artvideoKOELN, refugee.engad.org, 2017  
 Noisefloor Festival, Stoke-on-Trent, UK, 2017  
 International Music Video Underground, Paris, France, 2017

11. A list of papers published during or after the period of the fellowship, and the names of the journals in which they appeared (Please fill in the format below). Attach a copy of each article if available.

Author(s)	Title	Name of	Volume	Page	Date	Note
Knox, E.	Terminal_emulator	<i>Design Ecologies</i>	5	13-31	2017	
Knox, E.	Affective ovation: Re-performing the dehumanised woman onscreen	<i>Studies in Theatre and Performance</i>	published online 24 August	1-17	2017	<a href="http://dx.doi.org/10.1080/14682761.2017.1365228">http://dx.doi.org/10.1080/14682761.2017.1365228</a>

12. Awards during the period of the fellowship (Name of the award, Institution, date etc.)

### Awards

Honorable Mention Award, LA Underground Film Forum, Los Angeles, USA, 2017

### Media articles written about the research

#### Japanese

Kazuhisa Kuwahara, サービスロボットはなぜ美しい女性？気鋭の豪アーティストが問  
いかける, Aera, Asahi Shimbun, June 14, 2018,

<https://dot.asahi.com/aera/2018061300024.html>

Art Navi, エレナ・ノックス, June 1, 2018, <https://ex.artnavi-bt.com/exhibition/2080>

#### Chinese

ZHANG Ying Jun, *Entering a 'different space' about the future* 九个明天：进入关于未来的“异度空间”, Vogue, China, May 2018,

[http://mini.vogue.com.cn/voguemini/news\\_19556bb100a11fc5.html](http://mini.vogue.com.cn/voguemini/news_19556bb100a11fc5.html)

*What kind of experience is "invading the future"? “入侵未来”是一种怎样的体验?*, ArtNest, China, August 1, 2018, <https://mp.weixin.qq.com/s/OTwraLnbJDMem7InJLfnaQ>

*Sci-fi artists with VR* 写科幻的艺术家们, The Robb Report, China, May 22, 2018, <https://mp.weixin.qq.com/s/TZWLeMxAuHVWcFMt290qSQ>

YING Hu, *Hangzhou has an exhibition that challenges sensibility, but curators are not willing to call it "technical art"*, Q Daily, China, May 14, 2018, <http://www.qdaily.com/articles/53062.html>

TING Yu, *There are 9 tomorrows, and the artists have foreseen everything* 未来有九个明天，艺术家们已经预见了一切, Wallpaper, China, May 12, 2018, <https://mp.weixin.qq.com/s/ZEipM8WG6PJZSfMq-PsVOA>

*Detonating the future*, Phoenix Art, China, May 10, 2018, <https://mp.weixin.qq.com/s/33-4auwiOC1ixdtbivPPHA>

九个明天·国际科技艺术大展 + 现场演出, Contemporary Art Survey, China, May 2, 2018, <https://mp.weixin.qq.com/s/fshqzaJ9LDKQOrKiyOa1Eg>

YANG Xin Xin, 科技，会让我们缺氧吗？Beijing Youth Daily, March 30, 2018, [http://epaper.ynet.com/html/2018-03/30/content\\_283077.htm](http://epaper.ynet.com/html/2018-03/30/content_283077.htm)

Phoenix Art, 媒体科技串联生活与艺术品味, March 29, 2018, <http://art.ifeng.com/2018/0329/3414716.shtml>

ZHOU Rui Xuan, 芯片、AI 新鲜呈现 北京歌德学院“变身”最新科技展览中心, Oushinet, March 29, 2018, <http://www.oushinet.com/qj/qjnews/20180329/287865.html>

DING Xiao Jie, *A Better Version Of You*: 一个关于未来的科技展会, 99Art, March 29, 2018, [http://news.99ys.com/news/2018/0329/18\\_211693\\_1.shtml](http://news.99ys.com/news/2018/0329/18_211693_1.shtml)

SHEN Li, *Art exhibition disguised as a tech fair opens in Beijing*, CCTV Culture Express, March 27, 2018, [https://news.cgtn.com/news/3267444f306b7a6333566d54/share\\_p.html](https://news.cgtn.com/news/3267444f306b7a6333566d54/share_p.html)

Leon, *A Better Version Of You*: 连续 9 天为你呈现未来世界, Time Out, March 27, 2018, <https://bit.ly/2tqhQBa>

YANG Gao, *A Better Version of You* – 科技展会开幕 带你领略世界科技革新成果, Artron, March 24, 2018, <https://news.artron.net/20180324/n992173.html>

Chu Chu, 对自己不满意？这里有一个关于你的“更好的版本”, Lens Magazine, January 2, 2018, <https://bit.ly/2Kbaj3w>

Sherry, 在一场艺术展览上，我最终被一家科技公司的产品虏获, Creators, Vice, December 26, 2017, <http://thecreatorsproject.vice.cn/read/a-better-version-of-human>

## English

Jacqueline Millner, *Snoösphere*, *Lull Studio*, The Senses and Society (Taylor & Francis), Vol. 13, Issue 2, pp250-253, 2018

Ty Lawson, *Art and technology create 'a better version of you'*, Culture, CGTN, April 4, 2018, [https://news.cgtn.com/news/30636a4d326b7a6333566d54/share\\_p.html](https://news.cgtn.com/news/30636a4d326b7a6333566d54/share_p.html)

GJ Cabrera, *State of the arts: Find a better version of you at Goethe-Institut*, The Beijinger, March 23, 2018, <https://www.thebeijinger.com/blog/2018/03/23/sota-better-version-you>

Katie Sutherland, *Autism and the arts: Making a space for different minds*, The Conversation, October 23, 2017, <https://theconversation.com/amp/autism-and-the-arts-making-a-space-for-different-minds-84768>

Sarah Ward, *Review: Snoösphere*, Concrete Playground, September 23, 2017, <https://concreteplayground.com/sydney/event/snoosphere-big-anxiety>, also 'Best Things To Do'

AFP, *Snoösphere*, Image of the Day, across Singapore Straits Times, Egypt Today, MSN Lifestyle, AVAX News, Daily Telegraph, MySinchew, Voa Indonesia, and many more, September 21, 2017

Lin Evlin, *Snoösphere: The art installation tackling mental illness*, Lateline, ABC, September 20, 2017, <http://www.abc.net.au/lateline/snoosphere:-the-art-installation-tackling-mental/8965984>, excerpted on ABC News

Lian Loke, *Snoösphere: Transforming pathology into play*, Artlink Magazine, Issue 37, Vol. 3, pp40-43, September 1, 2017, <https://www.artlink.com.au/articles/4618/snoC3B6sphere-transforming-pathology-into-play>

Jill Bennett, *The Big Anxiety*, Limelight Magazine, September 19, 2017, <http://35.201.18.166/features/the-big-anxiety-festival-of-arts-science-people>