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Editor's Note

Gendered Innovation in Asia Special Issue

Gendered innovation is a science and technology innovation project initiated in 2009 by Londa Schiebinger, a feminist scientist at Stanford University[1]. It has been ongoing in the United States and Europe since then. It aims to improve the quality and convenience of life for all people by enhancing the excellence of scientific knowledge through unbiased research. It also seeks to increase the adequacy of technological products and medical treatments based on sex and gender analysis in scientific and technological research and development. Gender innovation is not limited to research methodology that corrects gender bias in science and technology. Schiebinger proposed three strategic approaches to achieve gender equality in science and technology to policymakers, education managers, scientists, and engineers[2]. The first is fixing the numbers of women by focusing on increasing women's and underrepresented groups' participation in science and technology. The second is fixing research institutions, which means promoting inclusive equality in careers through structural change in research organizations. The third is fixing knowledge—gendered innovation—that stimulates excellence in science and technology by integrating sex, gender, and intersectional analysis into research. Thus, we should understand gendered innovation as part of larger efforts to promote feminist innovation in science and technology. It removes gender biases from science and technology research and development and transforms the scientific institution, culture, and human power structure through new knowledge-making.

Actual cases of gendered innovation are very diverse for each sub-field of science and technology. It is not possible to list all examples here, but we need to delineate one of them in this note[3], a case of video games for children. Although

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[1] Please find detailed information about Gendered Innovation at its official website (http://genderedinnovations.stanford.edu). For a published article, please refer to Schiebinger and Schraudner (2011).

[2] The contents of this part refer to the http://genderedinnovations.stanford.edu/what-is-gendered-innovations.html

[3] More examples and cases of Gendered Innovation are available from http://genderedinnovations.stanford.edu/case-studies/games.html

women enjoy video games more than before, the stereotype that games are masculine still prevails. Under this situation, there could be two ways game designers release games for girls. The first way is to design games for the primary consumer, boys, as it has been so far, but to encourage girls to develop the skills to be good at them. The second one is to create a separate game that girls might prefer. However, in this case, many games have tended to emphasize features considered to be liked by girls, such as pinkish colors, cute designs, and princess characters. As expected, both methods have obvious limitations. The first one puts the additional burden on girls to develop their ability to play games designed for boys. In the case of the second one, which reflects stereotypes about women, it is highly likely that it does not match the various preferences and tastes of actual girls and has a negative effect that reinforces gender stereotypes.

Gendered innovation proposes a new way to design games. Its goal is to create virtual realities that game players can find comfortable and attractive, whether they are boys or girls. Thus, game designers first need to analyze actual gender-specific behaviors and assumptions about genders related to games. For example, according to a 2008 survey of game preference and popularity among boys and girls, the most popular and marketable video games are those that do not show strong gendered preferences and are thus preferred by both girls and boys. This survey implies that the existing ways of producing games for boys safely chosen by designers rather reduce the popularity of games. Of note is that games developed through gendered innovation could be a powerful technology to weaken gender stereotypes and biases in the real world and strengthen their sales record.

Gender innovation proposed by Schiebinger is one way to do feminist science and technology R&D but is not perfect or absolute (Leem & Kim, 2020). There must be other and more ways to create feminist science and technology which require the recognition that technology is by no means gender-neutral, or more precisely, male-biased, and thus requires feminist intervention. As in many other fields, women and men are not equal in science and technology. It is well-known that biological sciences such as neuroscience and evolutionary theories have justified gender discrimination in the name of 'differences between sexes.' In addition, digital culture shown in games and online spaces uncritically reflects toxic stereotypes about women and men.

On the one hand, knowledge and technologies on a woman's body are mostly restricted to reproductive functions such as pregnancy and childbirth. Medical technologies and products for infertility treatments and contraception have almost

always targeted the female body and thus reinforced motherhood ideologies. On the other hand, many technological products, such as automobiles and airplanes, have been developed assuming drivers and pilots are male. Scientists have developed new drugs or studied diseases with male animals and male human subjects because of the convenience of the experiment or to protect women from side effects and risks. For example, in clinical trials for the diagnosis and treatment of cardiovascular diseases, most subjects are male, thus making it difficult to detect and treat cardiovascular diseases in women at an early stage.

What matters now is not "why" feminism should intervene in science and technology, but "how"—we must consider different contexts and situations. For this "how," we need more stories about science, technology, and gender contextualized in Asia and science and technology situated in Asian women's bodies and lives. This special issue is an attempt to enrich such a story. The four articles in this issue with various themes and methodologies will reveal national and transnational contexts and situations overarched by 'gender innovation in Asia.' The first paper, "Examining Women's Dental Disorders through Multi-level Sex and Gender Analysis: With Implications on Korean Women's Oral Health," analyzes the existing research on two oral diseases with a high proportion of female patients and explores the current status of sex and gender analysis of both diseases. This paper urges a rigorous study on the oral health of Korean women and suggests a useful, new analytical tool for gendered innovation, specifically applicable to the medical field.

In the second paper, "Reproductive Technologies and the Future of Motherhood in ChenQiufan's Science Fiction. In This Moment, We Are Happy," the author aptly finds the future of reproductive technologies and motherhood from a Chinese science fiction novel. This paper draws on reproductive technologies' ethical, moral, and gender implications from stories depicting a future in which people of different genders, sexual orientations, nationalities, and desires use reproductive technology, giving readers many thought-provoking moments.

The third paper, "Critical Zooming in on the Fast Fashion Industry Focusing on the Documentary Films *The True Cost* (2015) and *RiverBlue* (2017)," contains a rare attempt to critically and actively interpret two documentaries about the fast fashion industry. This paper effectively reminds us of the intersection of environmental and gender issues by analyzing these two films exposing the global fashion industry's problem that has caused environmental pollution and exploited women's labour in Southeast Asia.

Finally, the fourth paper, "Digital Divide and Life Satisfaction among Married Immigrant Women in Korea," examines the mobile internet access, skills, and use of married immigrant women living in Korea and their effects on those women's life satisfaction. Based on the face-to-face interview results of over 600 immigrant women in 2007, the author concludes that digital access positively affects life satisfaction, which is worth an immediate policy consideration.

Although each of the four studies in this special issue deals with different Asian contexts and situations related to science, technology, and gender, it is also worth noting that all studies have strong global implications. These global-Asian connections and inter-relations are what are indispensable to exploring how feminism intervenes in science and technology.

References

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