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Methods for Intervention: Gender Analysis and Feminist Design of ICT

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By focusing on gender analysis and feminist design of Information and Communication Technology (ICT), this special section brings together three strands of expertise: Science and Technology Studies (STS), Gender Studies and computing.[1] A commonality among these three disciplines is a shared interest in interventions to improve the world we live in. Nevertheless, particularly Gender Studies and computing seem difficult to combine, partly because of their different epistemologies. Whereas deconstructivism, the challenging of categories and dichotomies, is an important target of many Gender Studies (and STS) researchers, most ICT researchers have a positivist stance toward science (Forsythe 2001; Weber 2004) as ICT developers need clear categories and choices to construct ICTs (Maass et al. 2007, 23). The presentations at the "Gender & ICT Symposium 2009" in Bremen, Germany, from which the articles of this special section originate, showed that STS provides theoretical concepts, tools, and theories that may help bridge this gap.

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Since each discipline has its own specific history, theories, and practices of intervention, we will in the following part sketch aspects of these understandings relevant to this special section. We aim to characterize and locate what we mean by "methods for intervention" for gender analysis and feminist design of ICT. Moreover, we will introduce each of the contributions to this special section.

For STS, the strand of expertise with which the reader of this journal is probably most familiar, it is common ground that researchers in some sense contribute to the field they study. Sociological as well as ethnographic traditions of STS see intervention as an inevitable feature of their inquiries (e.g., Woolgar 1988; Ashmore 1989). The understanding of intervention as inherent to empirical research is taken as a theoretical argument against a positivist position that assumes the possibility of drawing a clear line that separates subject and object of research.

A second notion of intervention in STS can be traced back to the roots of STS in the 1980s. Early STS approaches combined an interest in studying science and technology with aims of contributing to democracy, welfare, equity, or protection of the environment (see e.g., MacKenzie and Wajcman 1985). This activist engagement has even been called one of the main elements distinguishing STS from other disciplines (e.g., Sismondo 2008). It has led to calls for a "postmodern science" (Ravetz 2000) or to the more recent call for an "interventionist turn" in STS (see e.g., Zuiderent-Jerak and Jensen 2007; Jensen 2007). This interventionist turn is accompanied by an increased interest in action-oriented and interventionist research (see e.g., Zuiderent-Jerak 2007; Bjørn and Boulus 2011).

A third notion of intervention in the field of STS that may be distinguished is a demand that research should not only demonstrate usefulness within academics but also in policy and business. Ethnography in technology design (Suchman 1987) and constructive technology assessment (Schot and Rip 1997) are examples of this understanding of interventionism. The contribution by Doris Allhutter in this special section perhaps fits best with this latter notion of intervention. By contrast, the contribution by Johanna Sefyrin points to the challenges of categorization and thus is an intervention aiming not only at computing professionals but also particularly at the consequences of what researchers do, which fits with the first kind of intervention.

Like STS, feminism (and Gender Studies) is a field with a long history of aiming at and reflecting about interventions. In first wave feminism as well as at the beginning of second wave feminism, feminist interventions were mainly directed toward the inclusion of women in, for example, politics and

labor. Technology was considered neutral and its impact on gender and society tended to be ignored. If technologies were taken into account, they were rather rejected as an inherently masculine project (for an overview see e.g., Gill and Grint 1995; Wajcman 2004). Particularly, disputes about technologies of human biological reproduction in the 1980s fuelled a rather technopessimistic stance (Corea et al. 1985) that—as Wajcman (2000, 2007) stated—was particularly permeating feminist STS thought for a long time. Donna Haraway (1991) emphasized that such a position is incompatible with research on intervention in technological design.

Gradually, feminist researchers and developers of technologies engaged in activist research, either by producing new technologies for women (e.g. Temm 2008) or by preparing checklists or rules to help designers to make "better", more gender equality oriented technologies (e.g., Bührer and Schraudner 2006; Hanappi-Egger 2007). Especially in ICT studies, the first approach has a strong tradition (see Bratteteig 2003 or Kreutzner and Schelhowe 2003 for an overview). The second approach has been challenged as reifying gender dichotomies rather than working toward their dissolution (e.g., Bath 2007; Maass et al. 2007). Alternatively, feminist STS scholars developed theoretical concepts and conducted numerous case studies during the last decades that deconstruct how gender as a category, as well as other structures of inequality, are co-shaped with technological artifacts and concepts (see e.g., MacKenzie and Wajcman 1985, 1999; Faulkner 2000; Wajcman 2004; Sørensen, Faulkner, and Rommes 2011). It is hard, however, to find examples where the findings of these kinds of studies are incorporated by designers of technologies. A possible weakness of this kind of feminist STS work is that it criticizes, but offers little advice as to what alternative, "gender sensitive" or "feminist" ICTs could look like. Indeed, although deconstructive feminist studies of ICTs have shown how gender-technology relations are co-constructed, they seem not so much to have been implemented in ICT contexts (where designers might seek advice about how better to go about their work) but rather put forth as reminders that it is important to reflect on and deconstruct such contexts (Stewart and Williams 2005).

The field of computing and ICT also has a long tradition of combining political engagement with research. Computing as a discipline includes the critical reflection of the social impact of its artifacts and the social responsibility of computing professionals.[2] Such a view is often associated with activist research on the behalf of women or technology design for the marginalized. However, STS and Gender Studies have pointed out several serious problems regarding intervention as a conscious, intentional act based on a political agenda, and assuming a clear relation between cause and effect.

One is that technologies are not always used the way the designers intended the artifact to be appropriated. There are always unexpected ways of using ICT or technology more generally (Oudshoorn and Pinch 2003). A second problem arises from the question for whom the technology should or can be designed. Historically speaking, working-class women and women of African descent were the first who criticized that feminism had white middle-class women in mind. During the last decade research on intersectionality put this issue on the table, again arguing that more is needed than mantra-like citings of the triad of gender, class, and race: an analysis of how these and other categories of inequality interfere in practice (Verloo 2006). Another famous position against identity politics "for women" was presented by Judith Butler, who argued that not only gender but also sex, the bodies of women (and men), and their strict binarity are effects of discourse (Butler 1993). It was furthermore problematized whether the privileged can at all speak *for* the subaltern or marginalized (Spivak 1988). So even if we knew what a women is or who the marginalized are, how can we as researchers or designers speak, or design, for them?

Alternatively, the focus in critical computing (e.g., Bertelsen et al. 2005) and especially in the fields of Human–Computer Interaction (see Sears and Jacko 2008; Preece, Rogers, and Sharp 2007) and Computer Supported Cooperative Work (see the Journal *Computer Supported Cooperative Work*) has been on developing new design methods. The democratic impetus of the Scandinavian School of participatory design (see Bjerknes, Ehn, and Kyng 1987; Bødker, Kensing, and Simonsen 2004) and the German and Swiss understanding of software design as a part of humane work design (Gorny and Oberquelle 1999), link social and critical theory to technology design. From its beginning, participatory design has been influenced by feminist and STS researchers like Susan Leigh Star, Lucy Suchman, or Tone Bratteteig. However, participatory design research rarely refers to STS work, nor does interaction design rely on it. Vice versa, STS and feminist research do not seem to benefit much from the developments in these fields. Lucy Suchman and Susan Leigh Star were two of a small group of scholars who worked within and across the three cultures of STS, Gender Studies, and computing, aiming to connect them all (Suchman 1987; Star 1995).

All in all, a lot of research has been done in all these separate fields of STS, feminist studies, and computing, but only rarely at their intersections. So it is still an open question how feminist theory and gender analysis of ICTs translate into a "feminist" design of computational artifacts, a question which each of the authors in this special section try to answer in one

way or another. The articles in this special section combine a gender and/or feminist analysis of the design of ICT, and they are aimed not at repeating gender dichotomies but rather at a constructive feminist intervention into that design. The disciplines drawn on by the authors also mirror this combination of interests. Taken together, the articles form an interdisciplinary combination of critical computing, STS, and gender research and so offer insights into what these disciplines can learn from each other and what kinds of interventions are imaginable.

All authors share both, an interest in the practices and materialities that are related with the design and redesign of ICTs, and a focus on empirical data on methodologies for designing technologies. This common focus on methodologies, on procedures rather than on outcomes, may result from the search for a middle ground between offering guidelines that reinforce gender differences, on one hand, and deconstruction of gender and ICTs without providing practical recommendations for designers, on the other. This is not to say, however, that changing the design methodology will inevitably lead to "better" (e.g., more democratic or more feminist) technologies (Berg 1998; Rommes 2006). Even the most feminist, gender-aware design may in the end reproduce old or create new societal inequalities, if only because there are so many actors involved in the co-construction of humans and ICTs (Oudshoorn and Pinch 2003). Nevertheless, the authors in this special section contend that methodologies may be one of the few places to start when doing interventionist, activist research on feminist designs of ICTs.

In their contribution, Maja van der Velden and Christina Mörtberg use their analysis of the development of new editorial software in Nairobi and the introduction of an e-government system in Sweden as examples, in order to question whether and how it is possible to design "for gender". They show the problematic of designing "for gender" when design, gender, and their interrelationships are still emergent. Design is, in this case, an ongoing negotiation between doing justice in design, for example, counteracting problematic inscriptions of gender, and being aware of unknowable design implications. With "undesigning design" Brigham and Introna (2007) offer an approach of how to design, if we "cannot know the Other", that draws on Levinas work. On this basis, the authors propose to "ungender gender in design" by employing Barad's concepts of intra-action and agential cuts. Ultimately, they conclude that designers will become ethical subjects when they consider the inclusions, exclusions, or, more generally, the consequences of each iteration of the design process, as a decision by which design and gender emerge simultaneously, as intra-active cut that has consequences for which they are responsible.

In her contribution, Doris Allhutter offers a methodology by which designers can develop accountability for their designs, to help them to become, in van der Velden and Mörtberg's words, "ethical subjects". This methodology, "mind scripting", is a way to use deconstructivist feminist approaches in a productive, interventionist way. By using the "mind scripting" method, designers and others who are involved in the design process become aware of, experience, and question the implicit assumptions behind the design decisions they take. Through the disclosure of, among others, gendered normative discourses and practices, and by becoming aware of the impact these may have on design decisions, the design team can decide to make other choices. Moreover, participants learn how these implicit assumptions may influence their future work and general belief systems in society. Allhutter shows how this methodology works in practice by discussing two case studies, one on game design and another on search engine development.

Whereas the other articles in this special section focus on the designers and the design of ICTs, Johanna Sefyrin's paper challenges the definition of designers and the gendered boundaries between insiders and outsiders of IT. Indeed, one of the assumptions behind much gender and technology research is that women are excluded from the design of technologies and that this may possibly lead to "gendered" designs. Through an ethnographic analysis of the development of an IT system in a government agency in Sweden, Sefyrin looks at how actors and the boundaries between them were configured. Actors were addressed and positioned themselves in multiple positions, which defied the insiders–outsiders dichotomy, showing that the boundaries between positions were dynamic and reconfigured throughout the whole design process. Hence, she concludes that the problem is not that women are excluded from IT design but rather that their contribution is invisible. Making women's contribution visible, as Sefyrin has done, is in itself an intervention in challenging traditional men–women, active–passive, and designer-user dichotomies.

Each of these articles contributes a piece of the puzzle of what a feminist intervention in the design practice of ICTs could look like. Their main conclusion is that feminist concerns such as unequal distribution of power and the reiteration of gender dichotomies should be explicitly addressed in every phase of the development of technology. Only in this way can we become ethical feminist analysts and designers of ICTs.

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Notes

1. We use the term computing to include Computer Science, Computer Engineering, and Information Systems as well as the discipline Informatics in the German and European tradition (see e.g., Björkman 2005).
2. See for example, the initiatives of the US organization "Computer Professionals for Social Responsibility" (www.cpsr.org) or the German Forum InformatikerInnen für Frieden und gesellschaftliche Verantwortung (www.fiff.de). Similarly, courses in "socio-technical systems design" and "computing and society" are obligatory in various EU computing curricula.

References

Ashmore, Malcolm. 1989. *The Reflexive Thesis. Writing Sociology of Scientific Knowledge*. Chicago: Chicago University Press.

Bath, Corinna. 2007. ""Discover Gender" in Forschung und Technologieentwicklung?" *Soziale Technik, Zeitschrift für sozial- und umweltverträgliche Technikgestaltung* 17 (4): 3–5.

Berg, Marc. 1998. "The Politics of Technology: On Bringing Social Theory into Technological Design." *Science, Technology & Human Values* 23 (4): 456–90.

Bertelsen, Olav W., Niels Olof Bouvin, Peter G. Krogh, and Morten Kyng, eds. 2005. *4th Decennial Aarhus conference: Critical Computing - Between Sense and Sensibility*. ACM: Aarhus, Denmark.

Bjerknes, Gro, Pelle Ehn, and Morten Kyng, eds. 1987. *Computers and Democracy: A Scandinavian Challenge*. Aldershot, UK Avebury: Gower Publishing Company Ltd.

Björkman, Christina. 2005. "Crossing Boundaries, Focusing Foundations, Trying Translations: Feminist Technoscience Strategies in Computer Science." PhD dissertation, Blekinge Institute of Technology, Sweden.

Bjørn, Pernille, and Nina Boulus. 2011. "Dissenting in reflective conversations: Critical components of Doing Action Research." *Action Research* 9 (3): 282–302.

Bødker, Keld, Finn Kensing, and Jesper Simonsen. 2004. *Participatory IT Design: Designing for Business and Workplace Realities*. Cambridge: MIT Press.

Bratteteig, Tone. 2003. "Making Change. Dealing with relations between Design and Use." Dr. Philos. diss. Department of Informatics, University of Oslo, Norway.

Brigham, Martin, and Lucas Introna. 2007. "Invoking Politics and Ethics in the Design of Information Technology: Undesigning the Design." *Ethics and Information Technology* 9(1): 1–10.

Bührer, Susanne, and Martina Schraudner, eds. 2006. *Gender-Aspekte in der Forschung. Wie können Gender-Aspekte in Forschungsvorhaben erkannt und bewertet werden?* Karlsruhe: Fraunhofer Institut für System-und Innovations-forschung.

Butler, Judith. 2003. *Bodies that Matter: On the Discursive Limits of 'Sex'*. New York, Routledge.

Corea, Gena, Renate Duelli Klein, Jalna Hanmer, Helen B. Holmes, Betty B. Hoskins, Madhu Kishwar, Janice Raymond, Robyn Rowland, and Roberta Steinbacher. 1985. *Man-made Women: How New Reproductive Technologies Affect Women*. London: Hutchinson.

Faulkner, Wendy. 2000. "The Power and the Pleasure? A Research Agenda for "Making Gender Stick" to Engineers." *Science, Technology, & Human Values* 25 (1): 87–119.

Forsythe, Diane E. 2001. *Studying Those who Study Us: An Anthropologist in the World of Artificial Intelligence*. Stanford, CA: Stanford University Press.

Gill, Rosalind, and Keith Grint. 1995. *The Gender-Technology Relation. Contemporary Theory and Research*. London and Bristol: Taylor & Francis.

Gorny, Peter, and Horst Oberquelle. 1999. "Worldwide CHI: HCI in Germany—Some Impressions and Facts from the Scene." *ACM SIGCHI Bulletin* 31 (2): 14–16.

Hanappi-Egger, Edeltraut. 2007. "Computer Games: Playing Gender, Reflecting on Gender." In *Gender Designs IT; Construction and Deconstruction of Information Society Technology*, edited by Isabel Zorn, Susanne Maass, Els Rommes, Carola Schirmer, and Heidi Schelhowe, vol. 13, 149–60. Wiesbaden: VS Verlag.

Haraway, Donna J. 1991. *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge.

Jensen, Caspar B. 2007. "Sorting Attachments: Usefulness of STS in Healthcare Practice and Policy." *Science as Culture* 16 (3): 237–51.

Kreutzner, Gabriele, and Heidi Schelhowe, eds. 2003. *Agents of Change. Virtuality, Gender and the Challenge to the Traditional University*. Opladen, Germany: Leske + Budrich.

Maass, Susanne, Els Rommes, Carola Schirmer, and Isabel Zorn. 2007. "Gender Research and IT Construction: Concepts for a Challenging Partnership." In *Gender Designs IT; Construction and Deconstruction of Information Society Technology*, edited by Isabel Zorn, Susanne Maass, Els Rommes, Carola Schirmer, and Heidi Schelhowe, vol. 13, 9–32. Wiesbaden, Germany: VS Verlag.

MacKenzie, Donald, and Judy Wajcman, eds. 1985. *The Social Shaping of Technology: How the Refrigerator Got its Hum*. Milton Keynes, UK: Open University Press.

———, eds. 1999. *The Social Shaping of Technology*, 2nd ed. Buckingham, Philadelphia: Open University Press.

Oudshoorn, Nelly, and Trevor Pinch, eds. 2003. *How Users matter. The Co-Construction of Users and Technology*. Cambridge/London: MIT Press.

Preece, Jennifer, Yvonne Rogers, and Helen Sharp. 2007. *Interaction Design. Beyond Human-Computer Interaction*, 2nd ed. New York: John Wiley & Sons.

Ravetz, Jerome Raymond. 2000. "What is Post-Normal Science?" *Futures* 31 (7): 647–54.

Rommes, Els. 2006. "Gender Sensitive Design Practices." In *Encyclopedia of Gender and Information Technology*, edited by Eileen M. Trauth, 675–81. Heshey, London, Melbourne, Singapore: Idea Group Reference.

Schot, Johan, and Arie Rip. 1997. "The Past and Future of Constructive Technology Assessment" *Technological Forecasting & Social Change* 54 (2-3): 251–68.

Sears, Andrew, and Julie A. Jacko, eds. 2008. *The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies, and Emerging Applications*. New York, NY: Lawrence Erlbaum.

Sismondo, Sergio. 2008. "Science and Technology Studies as an Engaged Program." In *Handbook of STS*, edited by Edward J. Hackett, Olga Amsterdamska, Michael Lynch, and Judy Wajcman, 13–31. Cambridge, MA: MIT Press.

Sørensen, Knut H., Wendy Faulkner, and Els Rommes. 2011. *Technologies of Inclusion; Gender in the Information Society*. Trondheim, Norway: Tapir Academic Press.

Spivak, Gayatri C. 1988. "Can the Subaltern Speak?" In *Marxism and the Interpretation of Culture*, edited by Cary Nelson and Lawrence Grossberg, 271–315. Chicago: University of Illinois Press.

Star, Susan L. 1995. "Introduction." In *The Cultures of Computing*, edited by Susan L. Star, 1–28. Oxford, Cambridge: Blackwell Publishers, The Sociological Review.

Stewart, James, and Robin Williams. 2005. "The Wrong Trousers? Beyond the Design Fallacy: Social Learning and the User." In *User Involvement in Innovation Processes. Strategies and Limitations from a Socio-Technical Perspective*, edited by Harald Rohracher, 39–71. München, Wien: Profil.

Suchman, Lucy. 1987. *Plans and Situated Action. The Problem of Human-Machine Communication*. Cambridge: Cambridge University Press.

Temm, Tatiana Butovitsch. 2008. "If You Meet the Expectations of Women, You Exceed the Expectations of Men: How Volvo Designed a Car for Women Customers and Made World Headlines." In *Gendered Innovations in Science and Engineering*, edited by Londa Schiebinger, 131–49. Stanford, CA: Stanford University Press.

Verloo, Mieke. 2006. "Multiple Inequalities, Intersectionality and the European Union." *European Journal of Women's Studies* 13 (3): 211–28.

Wajcman, Judy. 2000. "Reflections on Gender and Technology Studies: In What State is the Art?" *Social Studies of Science* 30 (3): 447–67.

———. 2004. *TechnoFeminism*. Cambridge, UK: Polity Press.

———. 2007. "From Women and Technology to Gendered Technoscience." *Information, Communication & Society* 10 (3): 287–98.

Weber, Ron. 2004. "The Rhetoric of Positivism versus Interpretivism: A Personal View." *MIS Quarterly* 28 (1): iii–xii.

Woolgar, Steve. 1988. *Knowledge and Reflexivity: New Frontiers in the Sociology of Knowledge*. London: SAGE.

Zuiderent-Jerak, Teun. 2007. "Preventing Implementation: Exploring Interventions with Standardization in Healthcare." *Science as Culture* 16 (3): 311–29.

Zuiderent-Jerak, Teun, and Casper B. Jensen. 2007. "Editorial Introduction: Unpacking 'Intervention'." *Science as Culture* 16 (3): 227–35.