Disrupting the Impression of Stability in the Gender-Technology Relation

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ABSTRACT
Technology researchers have emphasized changes caused by ICT during the last decades. Recent gender research emphasizes that both gender and technology are flexible categories. However, a recurring argument in feminist literature is that the situation of women in ICT "still" haven't changed, despite three decades of continuous efforts, thus producing an impression of stability in the gender-technology relation. We still criticize mainstream research for being gender blind, but have we become blind to changes in the gender-ICT relation? This presentation invites to a thought-experiment, asking what we can learn from focusing on change, and exploring what seems to be a gap between the theoretical and empirical level of gender research.

Keywords
Gender, stability, change, discourse, computer history, Norway

INTRODUCTION
"The cultural association between masculinity and technology in Western societies is hard to exaggerate. It operates not only as a popular assumption […] but also as an academic 'truth'"[14], Grint and Gill claimed in 1995. When we review research literature on women in science and technology, or in ICT specifically, it still seems to hold a value of truth, as a recurring argument in this literature is that the situation for women "still" hasn't changed despite two or three decades of continuous efforts to improve the situation, or that temporary progress "has stalled or eroded" [25]. While mainstream technology researchers and theorists, like Ellul [10], Negroponte [19], Virilio [24], or Castells [3], emphasize the enormous changes brought to modern society by computer technology, some with optimism, others with less optimism or outright pessimism, feminist scholars (I'm no exception) have emphasized stability – not in modern society, but in the gender-technology relation. Grint and Gill pointed to this tendency as early as 1995: "In technology theory the key question has been how to explain change, while for feminists it seems more urgent to explain continuity, the enduring inequalities and the fact that gender relations survive so little changed through every successive wave of technological innovation" [14]. The repetition of stability has continued until today, both in Europe and in the US, and it has continued despite changes in both gender and ICT. In the US, Cohoon and Aspray point to how "almost thirty years of efforts have failed to produce a sustained increase in women's participation in computing. Women remain seriously underrepresented, and the intentions of college-bound students […] indicate that the situation is not likely to improve any time soon" [4]. In Europe, Wyatt points out that "ICTs themselves are different from what they were 20 or 30 years ago, gender relations have changed somewhat, and our theoretical understanding of gender and ICTs has also changed. And yet gender inequalities persist, even in countries such as Norway, and technologies remain implicated in the structure and performance of inequality" [26]. In Norway, a researcher commenting on her own research showing gender differences in computer use among Norwegian youth says, "I think that it [the gender differences] will always be like that" (*Aftenposten* 04.06.2004).

The aim of this article is to challenge this impression of stability, not by rejecting research projects that have documented stability in the gender-technology relation, but rather, as a thought-experiment, to explore what a specific focus on change can teach us.

Theories predicting change
In theories inspired by poststructuralism, both gender and technology have been described as multi-layered categories. Harding's proposal of seeing gender in three aspects, as gender symbolism, gender structure, and individual gender

[16], has been widespread in gender and technology research. Similarly, recent technology research has emphasized that technology should not only be seen as the artifact itself, but as a complex including knowledge, routine, symbols, and position in a social web [2]. Furthermore, gender and technology research have emphasized that gender and technology are co-constructed, weaved together in a complex web of society and technology, culture and nature [11, 15]. In other words, we have seen an increasingly complex understanding of how the gender-technology relation works. And in the very heart of poststructuralist theory lies the potential for change; the deconstruction of constructed social meaning, illuminating how things could have been constructed in other ways, and pointing to how meaning is constantly re/constructed [23]. Connell's description of gender as something that is constituted in a "historical process, and accordingly can never be fixed, nor exactly reproduced" [5] also seems to reject the idea of stability from the start. Thus, when it comes to gender and ICT, there seems to be a gap between the theoretical and the empirical level; the first theorizes and predicts a constant change, while empirical research gives nourishment to descriptions of stability.

Our blindnesses

Feminists have for decades criticized mainstream technology research, political authorities and educational institutions for being gender blind. To substantiate the need for a revised history of technology, Stanley points out how mainstream technology researchers, when "looking backward through the distorted glass of a prevailing cultural stereotype that women do not invent, have found, not surprisingly, that women never did invent" [22]. On the other side, Connell has pointed out how even "sex difference research" is blind to seeing similarities [5]. My question here is whether we have become blind to change in the gender-ICT relation: could it be that we have been "looking for" stability instead of change? Is it time to scrutinize how we, through our research, retell, reconstruct and thereby also re-create a specific version of "reality"? Or to phrase it with Wyatt, "[t]he question is not so much 'do we need further analysis?' but rather, 'what kind of research do we need?'" [26]

What can we learn from a focus on change?

The thought-experiment of this project is to ask what we can learn by focusing on change in the relation between gender and technology, or more specifically, gender and ICT. We certainly know that the gender-technology relationship has not remained stable. This is obvious when we take on a long-term historical perspective, but also during the last decades, even since the millennium, there have been changes in the gender-technology relation. What kind of changes can be seen, on what levels, in which fields, and under which conditions? Recent gender and ICT research has pointed out the need to recognize diversity, variations, multiple masculinities and femininities. But are these variations change, or are they rather seen as examples of exceptions, special cases, or extraordinary individuals? Does change need to involve a majority, a consensus, or perhaps "relevant social groups"? Does it need to be permanent, or go in a particular direction to be recognized as change?

This project explores questions of change and stability on several levels; long term change, changes in educational institutions, changes in individuals' relationships to computer technology, and changes in cultural images. Norway provides an interesting case, as it ranks high on global gender equality measures and statistics. State feminism is often mentioned as one of the main driving forces towards gender equality in Norway, and there is a strong mainstreaming of a gender perspective in politics, whitepapers and educational institutions [13]. The high degree of gender equality has also made Norway a good example for the 'stability-argument', as Wyatt illustrates in pointing to how gender inequality remains, "even in countries such as Norway" [26].

The main goal here is not to provide clear answers, but rather to pose some questions that can act as a fruitful starting point for discussions about how we can understand change and variation in the gender-technology relation. As this short paper can only present a sample from this project, the challenge of how to understand change and the invisibility of change will be illustrated with an example from a study of the cultural appropriation of computer technology in Norway since 1980.

CASE: NORWAY

I have elsewhere treated the cultural appropriation of computer technology in Norway in the period between 1980 and 2007 by analyzing how perceptions of the relationship between gender and computer technology have developed in the popular discourse of the press since the early 1980s [6, 8, 9]. Some of the findings are not surprising, as the computer's masculine connotation as well as the low proportion of women in computer related contexts are familiar and have been discussed in most western countries over the last decades [1, 17, 18]. However, a detailed analysis of the discursive constructions can teach us something about how and why we have seen this strong prevailing connection between men, masculinity and computers, which can help illuminate the impression of stability in this picture.

If we look at the whole period between 1980 and 2007 we can see three main phases in the cultural appropriation of computers in Norway. First, in the introductory phase in the early 1980s perceptions of gender were unclear and

ambivalent. Even though the most eager computer users were portrayed as male, computers were also assumed to offer a special opportunity and create new jobs in or near the home for women with care-giver responsibilities [8]. This phase soon gave way to a period when computers and computing were more clearly gender-typed as masculine. A more homogeneous discourse was created through several discursive logics. The most important of these is a pattern of visibility and invisibility, which makes men's use of computers and women's non-use visible and representative for men and women, while lack of computer skills among men and women's use and computer skills remain discursively invisible. After the millennium we see an expansive period, as discursive changes in this period are closely tied to a general spread of computers in society, expanding the image of the computer user to include new groups and in ways that challenge the previous gendered pattern of visibility/invisibility.

In contrast to the assumption that the masculine history of computers made computer technology enter Scandinavian culture as a masculine technology, which is used as one explanation for gender differences in relation to computers [20], this material indicates quite the opposite; that computers did not enter culture with a readymade masculine symbolism attached.[1] Instead it entered with an unclear, ambivalent and confusing gender-typing, as it has connections to different cultural images of gender and technology, among them the secretary's typewriter. The ambivalence in gendered value attached to the computer in the introductory phase indicates that computers had not yet been enrolled in the masculine technological culture.

Why did the discourse develop in ways that made the computer less ambivalent and more clearly masculine throughout the 1980s and 1990s? Analysis of the discursive logics contributing to a hegemonic discourse indicates that the discursive development followed a pattern in which gender was not only used as a difference between people, but also as an ordering structure which made men and women's actions visible and invisible in a pattern reminiscent of other fields of society. Thus, what is made visible is not always the "true" story about what men and women do, but rather a story filtered through cultural expectations towards men and women. The continuous focus on gender as the main difference, even when reporting about a closing gender gap, like the researcher believing things would never change, indicates that gender is the most apparent category we use to structure our perception of society, thus, forcing gender back in as one of the most important differentiating categories.

The gender ambivalence of the early 1980s might be ascribed to the newness of the computer; a difference in kind. In the period after 2000 we have however a difference in degree: "more is different" [21]. In 2007, access to computers and the internet had reached almost the same level of diffusion as radio and television in the private sphere, and the main divide in access and use is no longer between genders, but between age groups. New technology is not interesting before it has become trivial enough to be boring and for everyone to use it, Shirky claims [21], and it is primarily in the period after 2000 that computers and the internet have reached this phase. Thus, the image of the user changes from the young male enthusiast to "everyone", using it for "everything". This does not only reflect how more people use the technology, but also a new way of seeing computer technology, as pointed out by Gansmo et al., who claim that "the generic concept of ICT is less meaningful to young people. They prefer to talk about specific activities that they perform using ICT ... The issue is no longer whether or not to use ICT, but what activities you need ICT to do" [13]. In the 1990s, access was one of the keywords in discussions about gender and ICT, with an underlying assumption that "access to the technology and information about its brilliance will make the women 'change side'" [12]. Increased access and use has not resulted in more women choosing ICT education so far. However, the developments after the millennium – the "difference in degree" and trivialization of the computer – might also be important for this to be realized.

The analysis of cultural appropriation of computers in Norway since 1980 illustrates both change and variation, but also how discourses might suppress variation, and thus also cover up change. Computer education is not only confined to the "hard sciences", and in most western countries the proportion of women is higher in computer education within social sciences, and about 50% in computer education within the humanities, arts and new media [4, 7]. For some reason, the courses that draw large numbers of women are more or less ignored both in research and in the press. When searching for change and variation we can find it, but we would perhaps be able to see even more change and larger variations if the discourse had not so persistently steered our vision toward male enthusiasts and the male dominated ICT education. This also indicates that we might have a larger potential for retelling the history of computer technology vs. gender as a story of change rather than a story of stability.

[1] And indeed, talking about the computer's "masculine history" is itself an example of how discourses about computer technology ignore women's contributions and participations in this history.

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