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European Journal of Women's Studies 2002; 9; 400

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Creating Places for Women on the Internet

The Design of a 'Women's Square' in a Digital City

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ABSTRACT Under what conditions do women create places for women on the Internet? And what kinds of difficulties do they meet if they try to do so? These questions are studied by comparing two groups of women involved in the design of (parts of) Amsterdam's digital city DDS. The female designers, who were involved as DDS was set up, did not want to pay attention to women's issues. This can be explained by looking at their position in feminist debates in Dutch society, their position in the organization of which they were a part and their personal identity. The second group of women, who were part of a women's organization, differed in all these respects. Thus, they had no problems in wanting to pay specific attention to women in DDS by building a 'Women's Square'. The problems of this second group of women were caused by the late stage at which they entered the design process. The ideas on gender and technology of the initial group of women had by then solidified in the script of DDS, making it hard for the second group to design the Women's Square in the way they wanted it. In this article it is argued that designers, women's organizations and subsidizing organizations should stimulate women's groups to get involved in the design of new technology at an early stage. From this case study, one can conclude that leaving women's issues to individual female designers is not an effective strategy.

KEY WORDS design ♦ digital city ♦ exclusion ♦ gender ♦ ICT ♦ Internet ♦ pioneers ♦ script ♦ social inclusion ♦ women in technology ♦ women's movement

INTRODUCTION

I have searched in that database [of citizens of a digital city] on 'hobbies' using the keyword 'women', in the idiotic presupposition that I might find

The European Journal of Women's Studies Copyright © 2002 SAGE Publications (London, Thousand Oaks and New Delhi), Vol. 9(4): 400–429 [1350-5068(200211)9:4;400–429;028648]

women or feminists in that way. But the only thing I got was rows and rows of boys that had filled out 'women' under their hobbies somewhere between 'beer' and 'soccer' (*laughs*). I had imagined something differently! (Interview¹ Boomen, 1998: 15, 16)²

In this quotation, one of the first users of Amsterdam's digital city³ 'De Digitale Stad' (DDS) recalls how hard it was to get information about women, or to meet other feminists or even other women during the first year of the existence of DDS. Indeed, in 1994 only 9 percent of the users of DDS was female. Women were largely underrepresented not only in DDS, but also on the Internet as a whole. The percentage of female users in DDS has gradually risen, from 9 percent when it was first set up in 1994 to 18 percent in 1996 to 21 percent in 1998 (Besselaar et al., 2000: 25). Although data about the number of female users of the Internet are hard to find,⁴ it seems the percentage of women in DDS was a good reflection of the women on the Internet in general.

The low number of female users of the Internet, especially in those first years in which the Internet was introduced, can partly be explained by the fact that there were hardly any places for women on the Internet.⁵ With 'places for women', I mean places that were particularly meant for women, in which women's issues were discussed or where women could meet.⁶ Boomen was not the only female user at that time who complained that the Internet was a man's world in which male-related topics were discussed (see, for example, Spender, 1995; Cherny and Weise, 1995). Gradually, the number of places intended for women have risen on the Internet. These can be distinguished as places that are meant to introduce women to the Internet (see, for example, Spilker, 1999; Spilker and Sørensen, 2000), places intended for the empowerment of women (see, for example, Harcourt, 1999; Camp, 1995) and commercial places directed at women (see, for example, Shade, 2000; Zoonen, 2000; Spilker and Sørensen, 2002). In the first year of the existence of DDS, there were no specific places for women.⁷ In the course of time, some places for the empowerment of women were created. But why did it take so long before places for women were created on the Internet?⁸

An explanation can be found by looking at the designers of the Internet. The Internet originated in the arenas of the military, industry, the academy and engineering, it was 'made' by computer scientists and hackers (Hafner and Matthew, 1996; Scott et al., 2001: 5). All of these are almost exclusively male environments. Why would these men create places specifically of interest for women? Indeed, in the case of DDS, *women* were needed to create places for women. A few months after the opening of DDS, a female user took the initiative for the creation of DDS.femail, a discussion group for women (e-mail Cramer, 1999). Two years after the creation of DDS, two female users created the popular site

in DDS called 'Babes with Beards' as a parody of the pornographic culture on the Internet (interview Poppe, 2001). About two-and-a-half years after the opening of DDS, a group of women created a 'Women's Square' inside DDS, in which several women's organizations presented information about women's issues.⁹ From these data, one could conclude that to make the design of the Internet, and ICT in general, more female inclusive, women should be encouraged to become software designers.

When the design process of DDS is looked at in more detail, the relationship between female designers and a more female-inclusive design appears a far more complicated process than one might first imagine.¹⁰ Although women were still a minority in the design process of DDS compared with the development of other ICT products, a relatively high percentage of them were female in the first year. Several of them had key positions in the design process. Founder of DDS Marleen Stikker, her personal assistant Martine Brinkhuis, one of the most active moderators Marianne van den Boomen, 'female hacker' Hanneke Vermeulen, office and project manager Liesbeth van de Kar, graphic designer of interface DDS 3.0 Marjolijn Ruyg and hostess and project manager Nina Meilof, who was responsible for keeping in touch with the inhabitants and customers of DDS, all influenced the design of DDS. Moreover, many of these women had an active interest in women's issues. Stikker had several friends who studied women's studies (interview Stikker, 1998). Brinkhuis had worked for Amazone, a foundation for art and women, and was among other things hired by De Balie to give attention to women's issues (interview Brinkhuis, 1998). Boomen had spent part of her psychology course on women's studies, she had worked in the Women's House in Amsterdam and wrote a book for women about the Internet (interview Boomen, 1998). Meilof was involved in the project 'Women and the Internet' together with DDS co-designer Steven Lenos (interview Lenos, 1998; interview Meilof, 1998). Nevertheless, none of these women took the initiative to create specific places for women in DDS. Women from outside DDS had to step in, to do this.

In this article, I study the influence of female designers of new technology on the female friendliness of that technology, using DDS as a case study. I study the influence of female insiders and outsiders of DDS on the creation of places for the empowerment of women. In the first section, I study the female designers of DDS and the context they worked in. Why did they not create places for women in the first year of the existence of DDS? In the second section I study the design process of the Women's Square in DDS by a second group of women, who were outsiders to DDS. What kinds of problems did they encounter that made it hard for them to shape the Square? Finally, some lessons will be drawn on how the design process of new technology in general, and of the Internet in particular, can be made more female inclusive.

DDS AND THE WOMEN'S QUESTION

Why did the designers of DDS not create places for women? I answer this question by looking at the macro-, the meso- and the micro-level. First, I discuss the developments in Dutch society with regard to women's issues. Second, I study the meso-level: what kind of organization did the female designers function in? Lastly, I take the micro- or the individual identity level into consideration.

The Women's Question in Dutch Society

How did dominant views on women's issues in Dutch society at the time DDS was founded play a role in the design of DDS? Several female designers referred to this context while explaining why they did not create places for women in DDS. According to female designer¹¹ Brinkhuis, the decision not to create specific places for women in DDS had to do with the designers' perception of what was on the political agenda in Dutch society at the time they created DDS:

Women's issues were already no longer that prominent on the political agenda. So maybe that is part of the reason that we did not think about it. While with hindsight you could say that if anything was important, it was precisely that. You should have made [women's issues] very prominent on DDS, should have paid attention to them. But, oh well, that just did not happen, because we reasoned very much from the political agenda. (Interview Brinkhuis, 1998: 7)

Indeed, in 1994, the point in time when DDS was founded, paying attention to women's issues was not high on the political agenda (Brouns, 1998b; Costera Meijer, 1996: 286). Moreover, research among high school students and among 388 social studies students at a Dutch university showed that women's issues, inequality and feminism were considered 'old fashioned' and 'not popular' (Dam and Volman, 1997: 132; Asselt and Groflin, 1997: 470). Thus, it seems that in Dutch society in general, women's issues were no longer considered fashionable in 1994. The female designers of DDS shared this opinion. Boomen, who had been very active in the women's movement and who was a moderator in DDS, said:

Well, you see, we had had the women's movement by then; we were going to do this now [set up DDS]. It was just not something that engaged me anymore. . . . At that point in time, my heart was with those discussions on 'which direction are we going in now with computers and the information society'. Whereas 10 years ago, maybe I would have immediately founded a women's group. (Interview Boomen, 1998: 17)

So, as we see, Boomen declared she was not that interested in women's issues anymore and that she had changed in that respect: whereas 10

years previously she would have immediately founded a women's group. This change in Boomen's attitude reflects the fact that not only had Dutch society changed, but also that so had the Dutch women's movement. In the Netherlands in the 1970s, women had founded separate groups and 'women's houses' in which men were not welcome, empowering themselves by emphasizing the similarities between women and their experiences (Meulenbelt, 1977).¹² In the period preceding the establishment of DDS, most women's houses had been made accessible to men. Related to this, women's organizations tried to integrate themselves into existing institutions. This 'mainstreaming', as it was called, was partly done to make women's issues topics to be considered part of regular policy. And partly it was done because the Dutch government had introduced cuts in the budgets of women's organizations, forcing them to collaborate with other organizations.

The changes within the Dutch women's movement did not come about without fierce debate. Not only were these changes opposed by some women, other women wanted even greater changes to come about in the feminist movement. This new generation of 'power feminists' and 'grrls', as they called themselves, was convinced that a feminist movement was no longer needed in present society (Hintum, 1995; Cels, 1999). Cassell and Jenkins described for example one group of those grrls, the 'Riot Grrls', that 'have overtly criticized the "victimization" approach taken by many "second wave" feminists, an approach they see as destroying female confidence and fostering the ghettoization of women' (Cassell and Jenkins, 1998: 33). This new generation of power feminists even considered second wave feminism as bad for women. Instead of arguing for the need for a feminist movement, they articulated an individualistic approach and emphasized that women in present society can do whatever they want with their lives. To them, oppression and inequality were no longer pressing issues.¹³ Consequently, in the Dutch women's movement intense debate evolved and is still going on about whether the women's movement is needed or not (Lenning, 1996; Hoekstra, 1999; Cels, 2000; Jouwe, 2000).

These discussions about the women's movement were reflected in the design process of DDS. Female hacker and DDS helpdesk worker Vermeulen wrote public parodies on the announcement of a book on 'women and the Internet' (Boomen, 1996) and on the announcement of a conference on women and the Internet (emails, Vermeulen, 1999a, 1999b). In these parodies, she ridiculed any special attention given to women and the Internet. Moreover, fear of creating an 'old fashioned ghetto' was mentioned by some female designers as a reason not to create separate places for women in DDS.

All in all, insofar as the female designers of DDS were interested in feminist issues, they can be seen as part of the new generation of 'power

feminists'. Although some of the women of DDS had started in the early years of the second feminist movement, their ideas had shifted. They did not want to create separate places for women in DDS. Moreover, the women's movement no longer 'engaged' them, as new hackers' ideals began to inspire them. These ideals were thoroughly embedded in the organization of DDS.

The Paradox of the Female Hacker

It seems that opinions in Dutch society about women's issues influenced the female designers of DDS. Equally influential were processes at the meso-level: the ideas about women's issues within the organization of which they were a part. Most influential on these ideas was the Dutch hackers organization HackTic Network, which made hackers' ideals an important part of the organization of DDS. These ideals, or 'ethics' as the hackers called them, encompassed a 'philosophy of sharing, openness, decentralization, and getting your hands on machines at any cost – to improve the machines, and to improve the world'. Moreover, according to hackers they 'should be judged by their hacking, not bogus criteria such as degrees, age, race, or position' (Levy, 1984: ix, 30).¹⁴ As this quotation shows, technical competencies was what hackers 'judged' each other on, what gave them status with one another. Gender is not even mentioned as one of the 'bogus criteria', it was not an issue. Though they realized there were hardly any female hackers, they did not (want to) consider this as an issue (Håpnes and Sørensen, 1995; Jordan and Taylor, 1998; interview Gonggrijp, 1998; interview Rodriguez, 1998).¹⁵

The female designers of DDS were highly influenced by this hacker ethic. In particular, founder Marleen Stikker was taught many of the ideals the hackers cherished, along with the technical knowledge she needed. This was easily done, as the hacker's ethic had much in common with the liberal ideas of the power feminists and grlrs. Moreover, there was some pressure on the female designers to adopt the liberal hackers' ideals, in particular those regarding equal treatment of men and women inside DDS. Even male designer Rodriguez felt the pressure of his peers against paying special attention to women. As he put it:

You have to be careful about it, that you don't say something like 'we are going to create a women's bar'. Or you will immediately get all those men complaining about that women's bar. On the other hand, you'll get those women who say 'but I really don't want a women's bar, I am simply a human'. No, you have to make it accessible for everybody. And also, the women we knew in the hackers' environment, they took the attitude 'well you should not create something for me just because I am a woman'. (Interview Rodriguez, 1998: 32)

This quotation also shows how the female designers themselves had fully absorbed the hackers' ethics: 'I am simply a human.' They did not want to be regarded as different because of their sex.¹⁶

While the male designers of DDS felt a pressure to adopt egalitarian norms, for the women of DDS, this pressure was probably even more intense. For many of them it was very important to feel that they belonged to the group of hackers. Boomen described how she found it 'an eternal shame' that the extension 'HackTic' in her email address was changed to 'XS4ALL' as she considered being called a hacker very 'fashionable' (interview Boomen, 1998: 5). The same kind of desire to belong to the group of hackers and wanting to be called a 'hacker' has been observed among Norwegian female hackers (Nordli, forthcoming). To the women of DDS, being related to women's issues was a hindrance to belonging to the group of hackers. As Boomen explained about one of the few female hackers in the Netherlands, Hanneke Vermeulen:

It was very funny because Hanneke did not want anything to do with anything that may possibly be placed under the label 'female'. She has always been one of the few female hackers there are and has always moved around in that scene, [saying]: 'it does not make any difference and if there are any people anywhere that do not care a bit about sex than they must be hackers'. She was always saying that kind of thing. And that Hanneke of all people . . . was constantly approached as a kind of feminist, she thought that was really horrible! (Interview Boomen, 1998: 17)

Thus, as part of a very small minority in the hacker community, Vermeulen did not want to be seen as a woman or, even worse, as a feminist. It seems strange that the women of DDS did not seem to notice the paradox they were a part of. On the one hand, hackers were supposedly people that did not pay any attention to people's sex. On the other hand, the women of DDS were constantly approached as 'feminists' by hackers, apparently because of their sex. Even founder Marleen Stikker has tried to erase her first name out of her email address to avoid being constantly approached as a woman.

So how did this paradox come about? In several studies, similar processes have been observed. Björkman did a study on computer science students, of whom only a few were female (Björkman et al., 1998: 4). She observed how these female students split up into two groups: the non-sexist group and the anti-sexist group. The non-sexist group coped with being a small minority in computer science by stating that 'sex is not relevant'. This was the same position all the male students adopted. The anti-sexist group was interested in equality questions and wanted to change their environment.

Similarly, Riita Smeds et al. (1994) constructed a matrix on one axis whether gender differences were noted and, on the other, whether

equality was actively promoted. According to these authors, 'in the gender sensitive approach, gender differences are accepted and equality is actively promoted. Individual differences and the different viewpoints of women and men are appreciated' (Smeds et al., 1994: 26), a viewpoint on gender that is comparable with the anti-sexist group Björkman distinguished. The non-sexist group would, in the terminology of Smeds et al., have a 'gender-insensitive' approach, which according to them is 'an individualistic approach: gender differences are not noted, nor is equality actively promoted. The fact that more men than women control such resources is overlooked' (Smeds et al., 1994: 26).¹⁷ All in all, one could say that although many of the women of DDS had been engaged in women's issues, their way of coping with the low number of women among the hackers was by ignoring potential differences between men and women and by not paying attention to equality issues in the design of DDS. They, as the non-sexist group Björkman distinguished, had a gender-insensitive approach.

The advantage of this gender-insensitive approach by the DDS women was that this made it easier for them to feel part of the group. However, it also implied adaptation to the hegemonic masculinity. Elin Kvande distinguished four strategies that female engineers used for integration in masculine organizations in which they were a minority. The strategy of the female DDS designers can be called the 'one of the boys' strategy, they 'want to be "like" their male colleagues and emphasize this similarity' and they believe that 'their gender is not relevant in a work context' (Kvande, 1999: 210). Wendy Faulkner also noted that female (and male) computer science engineers said that gender was not important in their work. According to Faulkner, this 'claim must be read as a "wish statement", because it was made by people (male and female) who readily identified a range of factors which make it easier for men, rather than women, to get on in engineering' (Faulkner, 2000a: 784). In another article, Faulkner referred to several other authors (Cockburn, 1985; Hacker, 1989; Carter and Kirkup, 1990), who presumably also observed that same 'pressure to become accepted as "one of the guys" ', which 'means that many vehemently deny any differences' (Faulkner, 2000b: 102). Indeed, Cynthia Cockburn wrote that for women entering a predominantly male environment, 'the most common strategy, it seems, is to adapt. "You have to go with the norms of the dominant group" ' (Cockburn, 1985: 204).

Laurie Kendall observed the behaviour of female users of a MUD called BlueSky, which was dominated by male engineers.¹⁸ According to her 'in keeping with acceptable performance of hegemonic masculinity, both men and women on BlueSky distance themselves from femininity and, to some extent, from women in general' (Kendall, 2000: 263). This 'distancing themselves from women in general' by male and female members of a group may be especially common in groups in which technology is

crucial.¹⁹ According to Faulkner, among engineers there is a 'collective identification with the technological artefacts they work on' (Faulkner 2000a: 263). Through such a collective identification with the technology and 'shared pleasures in technology', which encourage an intimacy with colleagues around technology (Kleif and Faulkner, forthcoming: 13), participants 'reinforce a group identity connected to computer technology. This also connects the group identity to masculinity' (Kendall, 2000: 261).

All in all, it seems that for the women of DDS, adaptation to the paradigm of the hackers that sex does not matter has helped them to be accepted as a part of the hacker community.

Balancing Identities

The individual identity level is important to take into consideration as designers often see themselves as representative of the users while designing a system (Rommes et al., 2001; Oudshoorn et al., forthcoming). Stikker, the founder and director of DDS, was highly regarded by both women and men of DDS, who saw her as a kind of role model. So it comes as no surprise that, when asked about women and technology, many of the DDS designers referred to Stikker's thinking. According to them, Stikker had refused several invitations to large conferences because she did not want to be invited as an example of a woman who had become a manager in a computer organization. Asked about gender in DDS, Stikker said:

Gender, by Jingo. . . . You know, for me that is not an issue, explicitly. I mean in the sense of it being a theme. . . . I did, during the initiation of DDS during the first phase, ask Ruth Oldenziel²⁰ to give a talk about it, but . . . I immediately thought it was a bit a classical position she took, about the razor and the lady shave,²¹ it was just another classic story about women and technology. That for a man technology may look technical and for a woman it should not, that there should not be too many buttons on it. That is an interesting point of view, it is, there is a lot to discover in that direction, but it never attracted me. (Interview Stikker, 1998: 7, 8)

So for Stikker, gender was directly associated with 'the classic position'. With this classic position, she referred to the stereotypical image of the female being technologically incompetent, afraid of technology and the victim of man-made technology. For Stikker this classic position was in no way attractive to her, as it did not relate to her own experiences with being a technologically competent woman. Having acquired masculine-associated skills, she and the other female designers no longer fitted this stereotypical image of femininity. Nevertheless, they struggled with this image. As Judy Wajcman wrote about women in technology: 'it is not simply a question of acquiring skills, because these skills are embedded in a culture

of masculinity. . . . Both at school and in the workplace this culture is incompatible with femininity. Therefore, to enter this world, to learn its language, women have first to forsake their femininity' (Wajcman, 1993: 19). So for the women of DDS, their denial of the importance of sex was not only important to become accepted as part of the hacker community. It was also important for their own identity as technologically competent people. The incompatibility of the stereotypical feminine identity with technology is probably even larger in the case of the computer, which in present western society is still a highly masculine-associated piece of technology (Dam and Volman, 1997: 129; Oost, 2000: 15).

For the women of DDS, working for DDS and being competent in the technology had become part of the way they constructed their identity. They felt very self-confident as women who had achieved skilful use of the technology. They strengthened this feeling by putting themselves in opposition vis-a-vis other women who were, according to them, not as self-confident or good in technology. As a female project manager in DDS said:

Some women need a very low threshold and courses and things like that. The Women's House has specialized in super-low-threshold courses for people who consider themselves as 'techno-idiots', you could say. You notice that for women this is indeed a very pleasant way to start, that they do have a lot of fear of technology. They feel something like: 'oh no, an ordinary course, I probably will not be able to follow that'. (Interview Meilof, 1998: 15)

In this quotation, Meilof sketches an image of women who are afraid that they are 'not able to follow ordinary courses' and who 'consider themselves as techno-idiots': not a very attractive image. By using 'they' in the same sentence as she mentions 'women', she places herself in a position outside women. An understandable move, seeing the unattractive stereotypical image she associates with women and technology.

In a study on high school students and the way they behave in computer science classes, Dam found similar ways of dealing with the 'inconsistency' of being a woman and being technologically competent. She asked the students to take a position in the feminist debate concerning women and computers. Dam concluded that 'on the level of the individual identity, girls and boys are trying to find "solutions" to deal with inconsistencies and contradictions. . . . girls run the risk of letting "being behind" or "being a victim" become part of their identity. That is not a positive identification. So although girls reproduce . . . the inequality discourse, they place themselves outside of that: they cannot and will not connect it with their own experiences' (Dam and Volman, 1997: 131).

Turkle and Papert, Cynthia Cockburn, Wendy Faulkner and Nora Levold have all found similar 'balancing' problems among women

engaged in technology. As Turkle and Papert formulate it: 'women are too often faced with the not necessarily conscious choice of putting themselves at odds either with the cultural associations of the technology or with the cultural constructions of being a woman' (Turkle and Papert, 1990: 151). Cockburn defined the problem as follows: 'women report finding themselves in a cleft stick with regard to technological work. Either you remain a "real" woman as defined by men, or you become a competent technologist' (Cockburn, 1985: 208). Faulkner uses the term 'gender inauthenticity' (which she derives from Keller and Cockburn) to 'capture the sense that a woman who chooses to go into a male-dominated occupation is in some way putting aside or undermining her feminine gender identity' (Faulkner 2000a: 262). Finally, Nora Levold studied how a female computer scientist had to negotiate 'her identity as a woman in a male-dominated research community (and world), her identity as a feminist and ... her vocational identity as a computer scientist'. According to Levold, this was problematic because being a feminist meant being critical of her own vocation, and 'criticism of the discipline as "male" per definition would then apply as much to herself as anybody else! ... That would indirectly imply that she has made a "wrong" choice (or is of the "wrong gender")' (Levold, 2001: 11, 14).

Just as in the case of the women Dam, Cockburn, Faulkner, Turkle and Levold described, it seems that for the female designers in DDS the image of being technologically competent with computers and being a woman concerned about women's issues was hard to reconcile. Consequently, among the female designers of DDS a culture was established in which women's issues were ignored. All in all, it is understandable that although the women of DDS had had affinity with women's issues, they did not want to pay specific attention to women's issues in the context of DDS.

According to their political ideological viewpoint, women should not be treated differently from men. This viewpoint was both shaped by debates in Dutch society about this issue and a consequence of their embeddedness within the hacker's ethics of the organization of DDS. Moreover, at the micro-level, the female designers had to balance their identities of being technologically competent with being a woman. The way they dealt with this was by not paying attention to women's issues. Thus, it is clear that attention for women's issues had to come from outside the design group of DDS.

WOMEN AND THE TECHNOLOGY QUESTION

The major group of women who did create places for women inside DDS was a group of women of the Amsterdam foundation Women's House (Stichting Vrouwenhuis). This organization maintains a building in

Amsterdam in which women's organizations rent offices and in which activities for women are organized. One of their activities was the foundation of the Women's Square in DDS. Why did they create places for women and what kind of difficulties did they run into?

To start with, the women of the Women's House were in a different position from the female designers of DDS. They were an important part of the feminist movement in the Netherlands at that time. As Marjan Nieuwenhuis, the project manager of the Women's Square described it:

You see, Nina [Nina Meilof, female project manager of DDS] does not believe that suppression of women actually exists. . . . It was very strong at that point in time, the idea that women are not suppressed at all and things like that. But you see, if you take such a standpoint, then of course you will not get very far with organizations who *do* believe in the existence of suppression and are dedicated to fighting it. (Interview Nieuwenhuis, 1998: 4)

As is illustrated in this quotation, the women of the Women's House held a very different position in the debates about feminism in Dutch society from the female designers of DDS. Whereas the women of DDS ignored or even criticized paying attention to women's issues, for the women of the Women's House women's issues were their 'point of departure'. Obviously, at the meso-level the women of the Women's House were also in a very different position. Whereas the female designers were part of an organization in which the gender-insensitive approach was dominant, the women of the Women's House were part of an organization that was gender sensitive and anti-sexist.

Did the women of the Women's House experience the same paradoxes of being technologically competent and relating to the (stereotypical) feminine identity as described in the previous section? It seems that they solved this paradox by relating to the technology in a different way than the women of DDS. Several authors pointed to the women's conference in Beijing²² as a factor of crucial importance for women's organizations and certainly for the women of the Women's House to start using the Internet (Kole, 1996; Zoonen, 2000: 34; interview Nieuwenhuis, 1998). During this conference, they discovered the Internet as an interesting tool to keep in touch with other women and women's organizations, both nationally and internationally (interview Mostert, 1998: 3). Whereas the female designers of DDS constructed being technologically competent and the creation of DDS as part of their identity, the women of the Women's House were solely interested in the technology as a tool to reach specific feminist goals. For them, it was not important to be seen as 'technologically competent'. They did not need to resolve the contradictory and inconsistent relationship between being a women and being technologically competent. Although not much research has been done about this issue, the scarce results do suggest that by regarding technology as a useful tool,

FIGURE 1
The Women's Square



women can avoid having to balance their female identity with being technologically competent (Zoonen, 2001; Wajcman, 1993; Berg, 1996; Cockburn, 1985). All in all, the female designers of DDS and the women of the Women's House had very different viewpoints both on gender and on technology. Because of these differences, the female designers of DDS could not create places for women in DDS, whereas the women of the Women's House created a 'Women's Square' inside DDS.

The Women's Square

On 17 September 1996, two years after DDS was set up, the Women's Square in DDS was launched.²³ The women of the Women's House rented this 'square' in DDS and hired parts of it to about 20 women's organizations. The Women's Square can be found on the map of DDS by clicking on the women's symbol drawn against a purple background. The eight 'buildings' on the square have the following themes (starting at the top): Women's House, 50+ women, information, arts and entertainment, welfare, work and income, emancipation, black migrant and refugee women (ZMV-vrouwen).

Next to this picture of the Women's Square, the ordinary functions of DDS could be found. To these, the Women's House had made some adaptations. Under the button 'discussion', the Women's Square not only had a discussion group for women, DDS.femail, but also one of the few moderated²⁴ discussion groups in DDS could be found: DDS.femail.mod. Moreover, a mailing list, 'womenmail', was installed. Women and organizations connected to this mailing list received messages directly in their mailbox. This was also a moderated group, only accessible to women. Last but not least, the advertisements banner next to the Women's Square did not contain advertisements, but led to a 'bulletin board', on which women's organizations could announce their activities.

According to founder of the Women's Square and the director of the Women's House, Liesbeth Mostert, they chose DDS as a place to create their Women's Square because:

We have chosen the easy way. . . We started with the Women's Square because DDS was there. If DDS had not been there, we would never have done it in this way. (Interview Mostert, 1998: 4)

So on the one hand, the women of the Women's House were helped by the fact that DDS had been developed before they joined it. On the other hand, the women of the Women's Square faced an pre-existing 'script' with regard to views on women and technology in DDS, as they tried to fit their own Women's Square into the concept of DDS. Among contemporary gender and technology researchers, the concept of 'gender script' is increasingly seen as a useful concept to explain the connections between gender and the design and use of technology. Akrich (1992) defines 'script' as follows: 'technical objects define a framework of action together with the actors and the space in which they are supposed to act'. She suggested that these scripts are the result of (unconscious) user-representations of the designers, which they 'objectify in technological choices' (Akrich, 1995: 168). A technology script is the assumptions about the use context that are materialized in the technology, which prestructure the use of the technology. When these user-representations and the resulting scripts reveal a gendered pattern, we call them 'gender scripts' (Oost, 1995; Oudshoorn, 1996; see also Brouns, 1998a; Zoonen, 2001; Rommes et al., 2001). A gender script will rarely be the result of designers' conscious attempts to exclude certain users. Rather, it will be the result of unconscious repetitions and reiterations of the hegemonic masculine norm. A gender script analysis can be specified as a study of who has to 'adjust' more, who has to pay the price for not fitting the norm that is reproduced in the artefact.

Indeed, the gender script of DDS was partly a result of the unconscious gendered user-representations of the designers of DDS, as their views on gender and technology became incorporated into DDS. In part, the

gender script of DDS was a result of the gender script of the technology on which DDS was based. As present director of DDS Joost Flint described it:

The Internet technology has very much been devised by young men. Everything that is devised facilitates that ideology. Every attempt to change it . . . meets with an enormous amount of resistance . . . amongst the old group. . . . The Internet has very much an ideology, I think, of freedom, everything is possible, we will solve it together, technology is not necessary to facilitate social structures, it is wrong to throw someone out of the group, discipline is not necessary. So you can see that the technology of the Internet does not facilitate that. (Interview Flint, 1998: 32)

As this quotation shows, the technology of the Internet contained a very specific script of freedom and anarchism derived from the hackers' ethics. This ideology, that was also found within the organization of DDS, had become built into the technology of both the Internet and DDS. Every effort to change DDS 'met with resistance' both in terms of the technology that did 'not facilitate that' and by the 'old group' of young men who had originally designed the Internet.

Flint points exactly to the types of problems the women of the Women's House faced when they came to DDS with their own goals and concepts. They met with resistance both from the 'old group' and from the technology script. The women of the Women's House faced this gender script as they tried to integrate their own goals, target groups and interface in DDS. In the remaining part of this article, I study the negotiations that evolved around the foundation of the Women's Square. In this way, the gender script the women of the Women's House faced becomes manifest.

Hardware and Skills: 'Sisters Are Doing it for Themselves'

People who wanted to use DDS needed to have access to a computer and to the Internet and they needed to have the skills to work with them. During the foundation of DDS, the designers of DDS had anticipated that not everybody would meet these criteria. To solve this problem, they had distributed public terminals throughout Amsterdam. In addition, they offered a few courses in an old people's home to teach elderly people how to use DDS. In the course of the second year, they abolished these facilities. Thus, when the women of the Women's House joined DDS, they faced a script in which specific hardware and skills were required.

The women of the Women's House realized that many of the female users of the Women's Square would have problems meeting the hardware and required skills criteria. Therefore, they decided to offer women hardware and courses in the Women's House. However, the Women's House itself also lacked appropriate hardware, both to offer access to

women and to give the Internet courses.²⁵ Before Women's Square founder Nieuwenhuis started, there was only one computer connected to the Internet in the Women's House:

I thought we needed seven more computers in the classroom. Those were all second hand computers. Then I asked if it would not be possible to buy one new computer, that in any case there would be at least one that was really good, you could say. Well, it turned out to be a disaster, getting all those second hand computers to work properly. (Interview Nieuwenhuis, 1998: 8)²⁶

In this description, part of the gender script of DDS becomes visible. Before people could use DDS, they needed to have access to good computers and the Internet. Founder of the Women's Square Nieuwenhuis experienced the lack of these as a 'disaster'.

Nieuwenhuis did not only lack good hardware, she also lacked the necessary skills to get them operating. The women working for the Women's House foundation or its adjacent women's groups had some experience with computers, using Apple computers for doing the administration. None of them had any experience with the Internet. None of them had any experience in working with computers at any level other than that of an end user. As Nieuwenhuis described it:

I have to say, I did not find it easy in the beginning, 'cause no one could help me, or anything. If someone explains it to you, it is totally different from your having to find out everything for yourself. . . . I went to buy those computers and then I heard a few more things and that is the way you learn: something from everybody, you could say. Because I do not have a single acquaintance that knows the least bit about computers. I only have a lot of female acquaintances. So I could never get support from them. (Interview Nieuwenhuis, 1998: 7, 8)

From this quotation, it becomes clear how important it is to be part of a network of people who know how to use the new technology. Nieuwenhuis had to deal with the considerable hardware problems more or less on her own. Indeed, in a Dutch research report on ICT and social inequality, the help a social network can offer in using ICT is considered an important variable. A social network that can help with ICT problems is mostly found with people with a higher income, a higher educational background and among younger people (SCP, 2000: 162, 163). The average user of DDS falls into this category, whereas the women of the Women's House had a social network consisting of older people with a low income, making it harder for them to find help with ICT in their network.²⁷

All the women's organizations that were supposed to shape a part of the Women's Square had to start from scratch in learning how to use the technology. In addition, they needed to have even more technical knowledge of DDS than ordinary end users as they had to create parts of the

Women's Square in DDS. Therefore, Nieuwenhuis organized courses for women's organizations. In four meetings, delegates from women's organizations were taught how to make a homepage, which would become part of the Women's Square.

In the first year of DDS, the technology of DDS did not cause as many problems for people who wanted to design a part of it. The female designers were firmly embedded in a social network that was deliberately created by the founders of DDS. In this network, the content providers and the designers of DDS worked closely together and the boundaries between users and designers were fluid (Rommes, 2002). As both designers and users were still learning how to use the new technology, they helped each other out with problems and some free courses were even given to anyone who wanted to create things on the interface. As female user and designer Meilof described it:

What was funny about it was . . . that you helped each other very much. It was technologically a bit complicated, now and then, but it was funny; because of that, everybody was in the same position. You had to help each other a lot, to explain things. (Interview Meilof, 1998: 4)

This DDS network was no longer in place when Nieuwenhuis and the women's organizations initiated the Women's Square. At the time the Women's House joined DDS, the boundaries between the designers, of whom several had become employees of DDS, and the users and customers of DDS had become distinct and firm. The organization had become more hierarchical as tasks were divided between the director, project managers and programmers. The programmers were responsible for the technological aspects of DDS, whereas project managers interacted with the customers, such as the Women's House. Interaction between the technological experts or the programmers and customers was made an exception. Thus, the women of the Women's House could not get much help with the serious technological problems they faced.²⁸

Moreover, the relationship between customers and project managers had become much more formal and consisted mostly of negotiations. This meant that although the DDS project manager might try to answer questions the women of the Women's House had about the technology, it was not an easy relationship, let alone 'funny'. Nieuwenhuis commented:

It did not work 'cause I just got snapped at. Of course, I asked hundreds of stupid questions because at first I just did not know anything. It is not so simple to understand everything. . . . At our own course, people may ask all the stupid questions they can think of. You can never react impatiently to that. (Interview Nieuwenhuis, 1998)

Nieuwenhuis describes here her interactions with her project manager, Meilof, in DDS. Phoning her caused a lot of irritation on both sides, as

Meilof herself was not a technological expert she could not help nor was it part of her job to help Nieuwenhuis with all her 'stupid questions'. As the tasks and responsibilities within the organization of DDS had become more formalized, DDS was no longer a place where help could be easily obtained.²⁹ Thus, the designers of DDS no longer buffered the exclusionary effects of not having the skills required by the script of DDS.

Negotiating the Gender Scripts of the Women's Square

I have described strategies the Women's House women employed to deal with some of the gender scripts of DDS. They were required to have hardware and skills that were not common among women at that time. So the women bought cheap second hand computers (which were technologically inadequate) and tried to set up a social network by asking computer sales people and the project managers of DDS for help. During the design of the Women's Square itself, the women of the Women's House encountered another gender script. In designing the Women's Square, they wanted to inscribe their own goals and views on the users into the interface of DDS.

The strategy they mostly used was to go along with the script of the interface of DDS. Often, they did not even think about the possibility of deviating from the original design. Design choices, such as the colour of the square and the women's symbol with which it was indicated on the map, were hardly discussed and were decided by the DDS graphic designer to fit the existing graphic interface. In other cases, the women of the Women's House sought ways to fit their own ideas with the script of DDS. The script of the squares, for example, offered eight 'buildings'; thus, eight organizations could be represented on one square. The women of the Women's House wanted, however, to have more than eight occupants on the Women's Square. To work around the script, they thought of eight themes connected with their women's organizations. Each theme was allocated a building, for which one women's organization became responsible. A women's organization responsible for a building had to allow other women's organizations that were also connected to the theme in their building (interview Mostert, 1998). In this way, the women of the Women's House adapted their own way of organizing to fit the script of DDS.

However, in a few instances the women of the Women's Square wanted to deviate from the script of DDS. These deviations immediately caused technical problems. As project manager Meilof explains:

Those octagons [on which the graphic design is based], those fit together very precisely, so you can never make a nonagon of it. That is immediately very complicated, then the system will fall apart. The system is generated, so it is very difficult to do something else, you have to break the script to do that. . . . So, it gets more and more complicated to change the interface. It is

not like: come on and try something nice, because then 80,000 people are bothered. (Interview Meilof, 1998)

The decision to use octagons in the graphic design, the generation of the system and the high number of users made the script of DDS resistant to change, 'it gets more and more complicated to change the interface', as Meilof said.³⁰ Apparently, the design of DDS had become obdurate.³¹

The women of the Women's House were confronted with this obduracy several times, for example when they wanted a 'bulletin board' instead of an advertisement banner on their Square. This appeared to be a difficult change, as on several occasions only advertisements were ever visible when you went to their site.³² The biggest problems emerged when the women of the Women's House wanted to change the script because they had other goals and user-representations than those represented in the existing script. In these cases, they not only faced the obdurate script of DDS, but also resistance from the original DDS designers.

The user-representations the Women's House wanted to develop during the design of the Women's Square were 'women's organizations'. As the founder of the Women's Square Nieuwenhuis puts it:

I just wanted to found and develop the Women's Square and [Meilof] immediately wanted to get known by it. Of course, I wanted to get known amongst women's organizations, but not outside of that. Because I saw it more in terms of the users. (Interview Nieuwenhuis, 1998: 5)³³

So, for the Women's House, getting known among women's organizations was of primary importance. To them, these were 'the' users, whom they reached via personal contacts in the large network they already had. They were irritated by the amount of media attention DDS provided, which they found exaggerated. The user-representations the designers of DDS had made were different. They wanted to reach 'everybody' and had defined 'vulnerable groups', among which they counted 'women'. For them, the target group for their activities would be individual women. Thus, Meilof saw the Women's Square as a means to attract a wide range of individual women to the Internet. This meant that she thought she was helping the Women's House by attracting a lot of publicity for the Women's Square. In her mind, this was even the best way of supporting the Women's Square: by making the Women's Square visible within the interface of DDS, by renting it a square and by presenting it to the press. The women of the Women's House did not even recognize this as support. All in all, the differences in user-representations were never recognized or discussed either by DDS or by the Women's House. It did, however, cause some serious problems in communication between the two parties.

The difference in goals and user-representations between DDS and the

women of the Women's House caused more misunderstandings and irritations during the negotiation process. Marianne van den Boomen, who had been a user and a moderator of DDS, wrote about an unmoderated discussion group, DDS.femail, that was in use before the Women's Square was introduced:³⁴

Have you ever seen those discussions on DDS.femail? (*laughs*) . . . Mostly the mail was coming from boys. . . . After a while, you get pretty fed up when one more boy shows up, saying 'why is it called DDS.femail, are only women allowed in here, et cetera?' Then I think 'hold it, there we go again'. Or when there is a boy who because of something he's experienced starts to complain about women in general or more specifically about emancipation. (Interview Boomen, 1998: 18)

Like Boomen, the founders of the Women's Square did not like the content of this group, nor did they like the fact that men made more than half of the contributions to it. Thus, the women of the Women's House wanted to create a place where women from women's organizations could discuss women's issues without having to defend their space against hostile male contributions. This feeling of 'having to defend your own space against men' seems to be very common on the Internet.³⁵ DDS project manager Meilof did not think creating a separate mailing list for women was a good idea. Following the DDS and hackers' policy to have an open and accessible atmosphere for 'everybody', she held the view that the Women's House was being excessive by wanting such a separate, moderated newsgroup:

We have founded a newsgroup that is so heavily moderated that no aggressive remarks can be made. Yes, it is over the top, but, oh well, if they really want that, you know, so that is what we have done. For certain groups it is definitely handy, I think. (Interview Meilof, 1998: 15)

As this quotation shows, although Meilof did not see the necessity of such a separate group, she finally went along with the wish of the women of the Women's House to create separate and moderated lists for women, even though this to her may have felt as excluding people. The fact that the Women's House was a paying customer may have helped in changing her mind. Whatever the reason, in January 1997 a moderated discussion group, DDS.femail.mod, was launched to supplement the already existing unmoderated group DDS.femail.³⁶ In the same period, the moderated mailing list womenmail was set up (email, Vrouwenhuis, 1997). This list was only accessible to women.

However, even though the women of the Women's House had managed to convince Meilof, the DDS script resisted the plans to create such separate groups. Liesbeth van de Kar, another project manager for the Women's House, said about these lists:

Terrible! It is something that still drives the system managers up the walls, I think. Yes, that just did not work very nicely at all. I do not remember the exact technical details, but they wanted to stop it. Because it . . . just broke down time and time again, you could say. So in itself it was totally justified, indeed, that Marjan Nieuwenhuis kept knocking on the door. (Interview Kar, 1999: 22, 23)

Both the moderated discussion group and the mailing list of the Women's Square caused severe problems. Not only did they break down or were sometimes inaccessible, Nieuwenhuis also noticed that, for a while, womenmail was accessible to everybody. She felt these problems were very time consuming and frustrating.

These examples show how obdurate the gender script of DDS had become. User-representations of users who had well-functioning hardware, an Internet connection, technological skills to work with them and a social network in which people knew how to use the Internet were all presupposed by the DDS script. Apparently, the women of the Women's House and most women in Dutch society did not fit this profile. Moreover, the specific ideas about gender and technology of the original designers of DDS had become part of the gender script of DDS. This meant that the women of the Women's House did not only have to overcome the resistance of the 'old group' of designers when they tried to design the Women's Square, they also had to overcome the resistance against change by the technology itself, as they tried to make DDS suitable to fit their own user-representation of 'women's organizations', instead of 'everybody'.

CONCLUSIONS

This case study of DDS suggests that female pioneers in a masculine environment cannot be expected to pay attention to feminine issues without any further support.³⁷ More precisely, Flis Henwood concluded that 'we should be wary of arguments that suggest that more women in systems design will, in and of itself, effect change in the design process itself and lead to new and more progressive priorities being adopted' (Henwood, 1993: 45). The female designers of DDS were pioneers in a hacker's environment in which technological competence was highly regarded. In this environment, they had to fight against stereotypes of being technologically incompetent because of their sex. By paying attention to the user friendliness of the design or by arranging courses for female users they again would reinforce the stereotypes they wanted to defeat.

It seems that the only women that could pay attention to women's issues were the women that were placed in a different position, such as

the women of the Women's House or Nina Meilof, who was hired as a mediator between programmers and customer. However, the women of the Women's House faced a technology and an organization in which the goals, the target groups and the interface had already become obdurate. They were confronted with several gender scripts as they tried to fit their concept of the Women's Square into DDS.

A lesson can be drawn from these experiences. Integrating female designers into a design process does not automatically lead to more attention to female issues. It might make more sense to give women's organizations influence in the design process of new technology with the specific task of paying attention to women's issues. Designers, women's organizations and subsidizing organizations should, however, take care that this influence is given space from a very early stage in the development of the technology.

NOTES

I would like to thank Marianne van den Boomen, Martine Brinkhuis, Yvette Cramer, Michaël van Eeden, Joost Flint, Rop Gonggrijp, Liesbeth van de Kar, Steven Lenos, Nina Meilof, Liesbeth Mostert, Marjan Nieuwenhuis, Ine Poppe, Felipe Rodriguez, Marjolijn Ruyg, Marleen Stikker, Hanneke Vermeulen and other designers and users of DDS for their kind help and the opportunity they gave me to interview them.

I would also like to thank Nelly Oudshoorn, Ellen van Oost, Sally Wyatt and other members of the gender and technology group, and Merete Lie, Vivian Berg, Agnes Bolso and Anne-Sophie Laegran and other participants of the discussion group of the Centre for Women's Studies of the NTNU, and an anonymous reviewer of the *European Journal of Women's Studies* for their comments on earlier versions of this article.

1. A list of interviews and correspondence by email can be found after the Notes section.
2. Marianne van den Boomen was asked to moderate an electronic discussion group in DDS. She was also one of the first users of DDS. For a discussion on how designers and users can be distinguished from each other on the Internet, see Rommes (2002).
3. A 'digital city' is a localized information and communication system on the Internet. DDS is localized in Amsterdam and was the first digital city in the Netherlands and one of the first in Europe (Bastelaer, 1998). It was founded with the help of political/cultural organization De Balie and hackers organization HackTic Network.
4. Research results show very different outcomes, depending on the techniques they use to gather a research population and in what 'connected to the Internet' means.
5. This does not imply that women will not use places on the Internet that include information and discussion topics of general interest. The absence of places and topics directed at women, however, made the Internet not particularly interesting for women.

6. According to Silverstone, 'spaces become places as we invest them with meaning' (Silverstone, 2001: 13). In this article, I discuss spaces that have become invested with a specific meaning for women; that are intended for women.
7. This is even more surprising as DDS was created with the idealistic goal to 'introduce everybody to the Internet'.
8. In order to answer this question, archives on the history of DDS and of the women's group who designed the Women's Square are used. Moreover, over 15 interviews were held with male and female designers of DDS and of the Women's Square.
9. In the period 1995–2000, DDS evolved towards a commercial organization. In 2000, the policy-makers of DDS transformed DDS into a commercial Internet provider (www.dds.nl). Since then, the Women's Square has become independent from DDS and can be found at www.vrouwenplein.nl
10. Literature about the connection between female designers and their attention to users show ambiguous results. German research (Oechtering and Winker, 1998) shows that the presence of female programmers does not automatically lead to more attention to the users of software, whereas Henwood mentions several researchers reporting the opposite result (Henwood, 1993: 42, 45). Håpnes and Sørensen found that there have been few empirical studies done to investigate these kinds of claims and the findings have been ambiguous (Håpnes and Sørensen, 1995: 174).
11. In the first design phase of DDS, many people were asked to participate in it, e.g. by moderating discussion groups, creating an interactive radio play or by discussing with the programmers the use of the metaphor 'city'. I consider all participants in these kinds of activities as having given shape to DDS, hence as 'designers' (see also note 2).
12. I do not know whether the creation of 'women's houses' was typical of the Dutch women's movement. Empowerment by looking for similarities was a more common feminist strategy in the 1970s and 1980s (see, for example, Levold, 2001: 13).
13. Similarly, the 'Quake Grrls', a group of women that played a game (quake) on the Internet, particularly challenged men on their own ground, 'refusing a separatist culture based on feminine interests and fantasies, insisting that women can hold their own in the realm of traditional fighting games and that they may take pleasure precisely in doing things that are not prescribed for women in our culture' (Cassell and Jenkins, 1998: 34). This strategy is, however, not suitable for every woman. Indeed, Cassell and Jenkins also noticed that the Quake women were 'self-confident, more comfortable with technology, and more mature in their tastes and interests'. Boomen described more of these kinds of women on the Internet in the Netherlands (Boomen, 1997).
14. Well-known Dutch hacker, founder of HackTic Network and co-founder of DDS, Rop Gonggrijp described how much he was influenced by reading about this hacker's ethics in the book by Levy (Interview Gonggrijp, 1998).
15. The ignoring of gender issues is a more common phenomenon in revolutionary movements in the Netherlands. In the Dutch student movement in the 1960s, attempts were made to overthrow the social class system of that time. These ideals were so encompassing, that the participants did not seem to notice the sex inequalities that showed up within the movement. Mieke Verloo describes similar processes in other social reform organizations in the Netherlands (Verloo, 1992; see also Anja Meulenbelt, 1977, for these processes in the Marxist and a black rights movement).

16. This quotation shows another interesting point, that: 'to make DDS accessible for everybody' in the eyes of the designers meant to make no diversification among users. As many feminist scientists have shown, this kind of egalitarian thinking easily leads to adopting hegemonic masculine values as the norm, forcing women to adapt to this norm.
17. 'Inequality is explained not by gender but by differential access to other resources, such as money, power and technological education' (Smeds et al., 1994: 26). Furthermore, they distinguish the gender-neutral approach and the gender-stereotyped approach.
18. An MUD or multi-user domain is an interactive place on the Internet.
19. Although Evelien Tonkens and Mieke Verloo distinguished similar strategies in non-technical organizations. Tonkens describes a similar strategy for women's studies as a scientific field (Tonkens, 1992). She shows how 'women's studies' tried to become a part of the scientific community by becoming 'more academic'. According to Tonkens, 'this academization is an effective means against the "little-girls-effect": adaptation is rewarded with the feeling of really belonging, being taken seriously and being allowed to discuss with the "real" science'. Verloo described a similar strategy among women in inhabitants' organizations, as she noticed that the women in her study did not want to pay any attention to women's issues. If they had done that, she noted, the women would have accepted their specific feminine task. This was exactly what they tried to get away from (Verloo, 1992: 5).
20. Ruth Oldenziel is a Dutch historian who specializes in gender and technology issues.
21. 'The razor and the lady shave' is an example often used to show differences in male and female stereotyped technology. The razor, which is intended to be used by men, is often in dark or metallic colours, has a lot of buttons with texts like 'in charge', or 'control' and has a large screw by which the razor can be opened to look at or even repair the inside workings of the piece of technology. The lady shave, which is meant to be used by women, is often in soft pastel colors, has only one button and it cannot be opened without destroying the technology. These differences show how gender stereotypes can become part of and reinforced by western technology (Oost, forthcoming).
22. This was an international conference organized by the United Nations where (non-)governmental women's organizations from all over the world discussed women's issues.
23. DDS was based on the metaphor 'city', and 'squares' were used as the organizing structure of the contents of DDS. Each square in DDS would cover a specific theme, such as sports, computers, Europe or multicultural issues. On each square, eight 'buildings' could be found, triangles that were let to organizations related to the theme of the square. Next to each square, the functionalities of DDS could be found, such as emailing or the option to see which other users were present in DDS.
24. In the first year of DDS's existence, most of the discussion groups were moderated. This means that someone, the 'moderator', deletes messages that are irrelevant, disrupting or even offensive for the discussion or its participants. Moderators often influence the discussion by summarizing the results of the discussion or asking specific questions.
25. Shade and Kole found similar problems in women's organizations in Canada and African countries (Shade, 1997; Kole, 1999). Kole noted: 'the women report a multitude of problems, including technical, connectivity, financial, lack of skills, language, access problems, lack of time and more' (Kole, 1999: 6).

26. Liesbeth Mostert, director of the Women's House, made the decision that the Women's House would spend money on this project. Marjan Nieuwenhuis worked as a volunteer for the Women's House on the Women's Square project, she was the main organizer and designer. I consider both as 'founders' of the Women's Square.
27. The Women's House and many of the organizations within it were founded during the 'second wave' of feminism. Most active women were between 40 and 60 years old.
28. As Meilof wrote: 'ironically, in the end Marjan [Nieuwenhuis] is probably better updated with some technical skills than me (e.g. building a computer network)' (email Meilof, 2001: 5).
29. Meilof said: 'we did advise them often and we have even also sometimes given names of people that could help them (also women) to create their own informal help network because we could not provide them the detailed support they needed' (email Meilof, 2001: 4), confirming that the women of the Women's House had to look outside DDS to find help.
30. Similarly, Meilof said:
 . . . there were a lot of limitations within DDS and I have regretted those: the strong design was so rigid that it allowed little variation. Only a year after the foundation of the Women's Square, DDS was ready to deal with the squares in another way, with new technology. A disgrace, of course, that technology precedes content-form. . . . It was always the dilemma of project managers: the rigid technology and in this case even the far too rigid graphic design that allowed almost no variations . . . very frustrating in the end. . . . DDS has, in that sense, learned a lot from the continuous requests and complaints of the Women's House. (email, Meilof, 2001: 2, 4)
31. Hommels describes several kinds of obduracy in her research on the obduracy of cities. The obduracy discussed in this article is comparable with what she describes as 'technical obduracy' (Hommels, 2001).
32. My own observations.
33. Meilof said that she was not seeking personal recognition via the project: 'DDS was proud of the Women's Square and wanted to show that to people there and then' (email, Meilof, 2001: 2).
34. DDS.femail had been started on the initiative of a female user who was 'shocked by the number of "male chauvinists" on the Internet' (email Cramer, 1999).
35. L. Jean Camp argued the necessity of 'women's only' lists after having reviewed several such lists that could still be visited by men. She concluded that 'the voices of men who cannot be silent even in a space ostensibly devoted to women means that there are not public spaces for women to talk about and to other women' (Camp, 1995: 115; see also Spender, 1995: 235-41). Laurie Kendall reviewed the literature about this topic and concluded:
 . . . women 'newbies' [newcomers on the Internet] joining existing forums have found themselves in unfamiliar, and sometimes hostile, territory (Brail, 1995; Camp, 1995; Kendall, 1995, 1998). Even on those forums with mainly female constituencies (Baym, 1995; Clerc, 1995), participants understand that their forum exists in a male-dominated context and therefore feel the need to use various strategies to limit participation or to protect their regulars from hostile interlopers (Correll, 1995; Hall, 1996). (Kendall, 1999: 64)
36. This unmoderated discussion group on women's issues has in the meantime become an assembly point for advertisements for porn-pictures.
37. This may also be an argument against the Dutch policy of 'mainstreaming'.

INTERVIEWS AND PERSONAL COMMUNICATIONS

- Boomen, M. van den, female user and moderator of DDS (1998) interview, 13 November, Amsterdam.
- Brinkhuis, M., female assistant to Stikker at De Balie (1998) interview, Amsterdam.
- Cramer, Y., founder of female discussion group and female user (1999) email: 'RE: DDS-interviewvraag', 19 May.
- Flint, J., male author users' manual; manager DDS (1998) interview, 27 January, Amsterdam.
- Gonggrijp, R., male security expert/hacker (1998) interview, 9 July, Amsterdam.
- Kar, L. van de, female project manager DDS (1999) interview, 22 April, Amsterdam.
- Lenos, S., male moderator 'Building and Breaking in Amsterdam' (1998) interview, Amsterdam.
- Meilof, N. (2001) email: 'FW: Stand van zaken onderzoek DDS en (concept) artikelen', 17 May.
- Meilof, N., female project manager DDS (1998) interview, 6 August, Amsterdam.
- Mostert, L., female director Women's House (1998) interview, Amsterdam.
- Nieuwenhuis, M., female founder Women's Square (1998) interview, Amsterdam.
- Poppe, I., female media artist, user (2001) interview, Amsterdam.
- Rodriguez, F., male programmer (1998) interview, 2 September, Amsterdam.
- Stikker, M., female founder/coordinator DDS (1998) interview, 22 June, Amsterdam.
- Vermeulen, H. (1999a) email: 'Internet xyz voor mannen - parodie', 19 May.
- Vermeulen, H. (1999b) email: 'Vrouwen en voetbal - de parodie', 19 May.
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