

A Gendered View on Computer Supported Work in the Office

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Abstract

Unqualified work for women and new, qualified jobs for men - this is the predominant reality in many offices in respect of information technology. This applies to public administration in Germany too where, over six years, I researched and actively participated in the introduction and the use of information technology. Although the administration had chosen a human-centered approach for work and technology design, the introduction and use of computers led to a polarisation, which again resulted in women being disadvantaged and in this way contributed to the continued existence of gender segregation and male domination. In order to break through the discrimination of women I was primarily looking for new ways to activate women and support them in their efforts to participate in the development of working conditions which are adapted to their skills and their different lives. For this reason I call in this paper for:

1. an activating work and technology design including all those measures which support women leaving the state of object of technological change in order to develop own perspectives for action;
2. person-related work design, which overcomes gender stereotyping and which perceives the inter- and intra-individual differences of women, and
3. an explorative technology design, which is nevertheless adequate for the task, allowing women using computers to try them out and to use them largely independently.

1. Maintaining Gender-Specific Work Separation

In the past few years approaches of human-centered design of work and technology have found widespread attention, especially in Europe, and not least within the Bremen public administration, which was the subject of my research. Human-centered theorists and designers focus on the development of work and technology in the interest of workers and emphasize the importance of all persons being affected by the introduction of computers participating in the design process (Greenbaum/Kyng 1991). They aim at working conditions which support the development of the workers' own personalities (Ulich 1991). They postulate a development of technology that corresponds with the basic objectives of a democratic society:

Six years ago the Bremen administration decided to follow a human-centered approach when personal computers were being introduced in the departments (Winker 1991). For the typing jobs, which were mainly held by women, these goals required setting up mixed-work offices. This involves allotting upgraded clerical tasks to typists so that they only spend half their time engaged in typing for their superiors.

Three years after starting to introduce personal computers in the Bremen administration, however, it became clear that translating those objectives into practice was another matter. Despite verbal assurances about the necessity of comprehensive reorganization, hardly any changes had been planned or carried out in the organizational structure up to that point. Thus, with the introduction of the new technology, hardly any of the typing pools had been reorganized into an upgraded mixed-work office. The work contents of the great majority of typists had not changed at all. At the same time, the use of word processing, instead of eliminating fragmented work and qualifying the typists, had led to new hierarchies by creating jobs for coordinators in the departments introducing information technology. These coordinators prepared textblocks, designed macros and set up address and batch files including programming on a small scale. 90 % of coordinators were male, although at the onset their training was the same as that of the typing staff. They experienced an improvement in their job satisfaction which resulted in an upgrading of skills and in having higher-valued and better-paid jobs. Technological change thus advantages those who already have recognized skills and a degree of control over their work tasks (Wajcman 1991). It results in new gender-specific disadvantages for women.

2. Reasons for Gender Discrimination

The deficits described do not occur by accident and the reason they exist is not a lack of basic prerequisites for the human-centered introduction of information technology in Bremen. Indeed, the theoretical foundations of the human-centered design of technology supported workplaces ignore the basic gender division of labour in our societies and which it helps to preserve: The structures of power and influence within the office, which often reflect the gender division of labour, are not of primary concern to those who design new workplaces. The fact that women at work are mainly found at the bottom of the hierarchy is ignored. The implementation of upgraded mixed work for typists fails in many cases because of widespread resistance by male bosses and clerical staff. As regards user participation the users are often also seen as being equal. Men, on the other hand, can often dominate the process of participation through their position of power in the office and because they master the classical rules of competition. Moreover, the human-centered approach does not recognize the fact that the reality of women consists of two spheres of work, paid work in the office and unpaid work in the family. Instead they base their approach on a standard male work-biography.

In order to find ways of abolishing the oppressive character of gender-based work and to prevent it being created anew when information technology is introduced, it is necessary to know the reasons for the reorganisation of gender divisions of labour. In order to capture the relationship between work, technology and gender analytically I follow Sandra Harding (1986) by distinguishing three aspects of socially constructed gender: the structural, the symbolic and the individual. These three aspects together describe the gender division of labour comprehensively. Analytically, they can be assessed separately:

1. **Structural aspect:** The jobs assigned to women in the office, e.g. writing tasks and data input, are part of the institutionalized gender hierarchy, which allows the administration to both behave cost effectively as well as to exclude competition by women from the qualified jobs done by men. By using selective and gender-specific personnel recruitment and deployment strategies, employers succeed in placing women in particular jobs, who do not need to be paid at the same level as male employees because of their responsibility for the reproductive sector and whose job related qualification potentials (social competence, correct spelling, text layout abilities) remain invisible and can therefore be utilized cost effectively. There are strong male interests in favour of maintaining this status quo and in cutting off their position through female competition. This is particularly the case where a reduction of in-company career opportunities through technical and organizational changes in the office occurs even without competition from women.
2. **Symbolic aspect:** The gender-hierarchic division of labour is strengthened by a strong ideological process of stereotyping maleness versus femaleness. Thus writing tasks are equated with women's work, are thus disqualified and therefore cannot be expected of a man. Technical competence on the other hand is assigned to men, who secure qualified and better valued work places and power in this way. These female and male stereotypes have an important function as interpreting and legitimizing elements and both influence and determine a gender-specific reality as factual segregational and assignment framework. However, gender stereotyping fulfills its function in maintaining a hierarchy between men's work and women's work not through the stable assignment of always the same abilities to women, but by assigning these in a flexible way. Thus, jobs which are unattractive to men at certain times, are assigned to women, are paid badly and in retrospect are defined as being particularly suitable for women. The term 'suitability' must be seen as trying to guarantee vertical segmentation in the job system.
3. **Individual aspect:** Gender stereotyping not only works in society as a whole but also imprints the personality of each individual member - man as well as woman. Women are discouraged and men are encouraged to develop those ways of thinking and occupations which enable them to execute technical tasks. Particularly in information technology, however, typical technical abilities, which keep up gender polarization through technical competence, are no longer required to the same degree. The shell construction of computers means that even a DP expert has little involvement with the hardware. Moreover, concepts such as qualified mixed work, which aim at redistributing work on a large scale and a restructuring of entire departments, endanger the position of men in the office through the incremental abolition of the division of labour, because part of the development of male gender identity is taking on a social role which is valued higher as that of women. This development make them feel insecure in their individual gender identity. However, the more the male image become fragile, the more men are rattled in their individual gender identity. This insecurity counts for the highly emotional and subjective debate, in which men are defending their ground against the breaking down of typical male and female work areas.

Although the gender division of labour appears to be stable, first contradictions in the individual gender identity and new demands to create more flexible organizations and to reduce hierarchies should be actively used for a feminist work and technology design. New technologies could then contribute to disrupting the established patterns of gender division of labour. Otherwise the 'old' mechanism, which ascribes certain tasks to the male gender, is activated again, as Cynthia Cockburn has shown (1985) with the help of a large number of empirical examples.

3. Women-Centered Design of Computer Supported Work

Work design which encourages personal development, which claims to be valid for women too and which is intended to help dismantle gender-specific discrimination, will have to integrate the category of gender into work and technology design. This would prevent work and technology design, which calls itself humane, continuing to benefit only the better off male clerks who otherwise remain the beneficiaries of the increase of technology in the office.

As a human-centred approach 'from the top' failed in the Bremen administration because of strong structural and symbolic barriers and because of individual actions by men and partly also by women, my approach emphasizes action by the affected women 'from below', in the sense of empowering action (Clement 1994). Although the structures of society determine the behavior of women in the sense of adapting to gender roles, there are at the same time many examples of resistance action taken by women working at the bottom of the hierarchy. This ought to be the starting point. When designing work and technology, every development in which individuals are trying to find new ways to increase their chances of non-conformity or even of open disagreement with gender roles must be supported. This is possible because the socialisation of gender is a contradictory process. It not only leads to conformity, for within it there also lies a portion of resistance. If this potential for resistance is supported by feminist work and technology design, new paths for action open themselves up for women, which can contribute to their emancipation and to the gradual collapse of the reality of sex discrimination. In this sense I am calling for:

1. an activating work and technology design including all those measures which support women leaving the state of object of technological change in order to develop own perspectives for action;
2. person-related work design, which overcomes gender stereotyping and which perceives the inter- and intra-individual differences of women, and
3. an explorative technology design, which is nevertheless adequate for the task, allowing women using computers to try them out and to use them largely independently.

I would like to exemplify this theoretical approach as follows by describing women's workshops. I set up women's workshops within the administration of Bremen which primarily addressed employees from the typing sections and led them myself for more than two years. The following are required part of the contents of these workshops:

- self assertion, speech training, carrying through own alternatives, where the reflection of the female experience of work and life is important;
- development of organizational alternatives as regards work, i.e. accomplishing mixed work
- competence in dealing with the new information technology, as regards the ability to assess technology and its effects as well as understanding its basic principles and the way technology functions.

With self assertion, work organization and technology as components the workshops are a concept for a comprehensive qualification of women which is integrated in three ways and which takes up my theoretical objectives. The workshop is determined not so much by general discussions but by the participants' concrete and active work. Depending on the given subjects, practical exercises for articulating their interests, the concrete change of the workplace as regards the work organization or the solution to a technical problem are in the foreground. It is important to me that there is a cooperative learning process in the workshops. Hierarchically organized administrative structures especially, often do not allow cooperative acting which therefore has to be re-learned.

3.1. Activating Work and Technology Design

The main prerequisite for women in order to be able to influence the design process in their own interest is for them to be able to participate fully. Technology supported work systems must be designed in cooperation

with users and technology experts, because only the future user is able to make a contribution with her knowledge, individual talents and ideas.

However, active participation in and design of the process of introducing new computer technologies is something new to all concerned, it is demanding and full of risks. It is new because up to now all innovation processes were always planned 'from above' and because the perception of the interests of the employees always concentrated on the defence of negative implications through employees representatives. Women working in typical women's jobs such as typists, however, are not used to talking about their ideas. The new task - to actively intervene in work and technology design - goes against the work role which they are asked to fulfill every day. As a rule they do not have space for making decisions, instead carrying out their tasks by following orders. They have been cured of acting creatively and spontaneously. Active involvement in the design process is demanding because interests of employees are contradictory in themselves and may be opposed to each other. The interests of women, from the typing sector especially, have to be pushed through against the present entrenched structures. It is because of this that they often shy away from disputes because there is a danger that the work climate will be upset even further by any dispute.

As a rule, one individual cannot do much against that much force of habit and the 'peaceful' role ascribed to women. A collective is needed which supports the objective of getting actively involved and of bringing one's own interests to bear on the process, in opposition to the usual role of women. 'Spaces for women' are important for this, where women can first say what is on their minds, talk about ambivalent feelings and become aware of them. This process takes time. It is therefore important that there should be regular women's meetings, which are open as discussion and communication forums for breaking up the gender-hierarchical division of labour. And in this sense women's workshops are places of shared communicational practice. Here women can talk about the subjective problems with their work up to now, they can formulate desires for a change in working conditions and they can develop first strategies for action to put these ideas into practice.

Getting involved actively requires a different competence than that which has been needed up to now. Because of this, women's workshops are not just about professional and technical qualifications. Exercises which help women to strengthen their self esteem and which support them in asserting their interests are a regular part of women's workshops. Although these workshops cannot be a substitute for self-awareness courses practical exercises which help them to have more confidence in their abilities and to overcome difficulties in speaking freely, can be carried out in small units during the course of one morning.

In the workshops women learn most from and amongst each other. There are still some women who for some time already have been going the way of voicing their own ideas. They are experienced in defending themselves. Others, however, remain fixed in their habits, even if outwardly they share the same fate. By discovering that they are not alone with their problem of lacking self-confidence but that other colleagues share their experiences, women who are hesitating will one day find new courage and strength to act on the reality of work. Instead of isolated individual routines for coping - "no one listens to me anyway" - a new involvement can come about, combined with the desire to increase one's own competence for action through further learning processes. When women gain new confidence in their abilities and learn how to articulate themselves in these workshops, this is a good preparation for the participatory process.

A further basic prerequisite for influencing the design process in the interest of fellow workers from the typing sector is a comprehensive structure for participation. The traditional structure of staff representation must be supplemented by new forms of direct participation and co-determination at the work-place. For this, individual workers must be at the centre, because the objective is to determine their own working conditions and desires as well as resistance and conflicts. Generalisations prevent access to the real interests of the people concerned. As a rule project groups will at first increase areas of conflict in the company. In the participation process it is important to allow conflicts to happen openly, without pushing them aside. Otherwise there is a danger that the beneficiaries of rationalization will also become beneficiaries of participation and that the losers of rationalization will lose out in the field of participation as well (Greifenstein et al. 1991). Changes can only come about by consciously discussing the gender-specific division of labour.

Experiences in various companies show, that even in project groups with equal representation, women were less able to push their point (Goldmann et al. 1993). Women more so than men also shirk away from any dispute, especially when working in lower positions within the hierarchy. Typists especially, as people directly affected, do not get a chance to speak. Additionally, the situation whereby they discuss things with their superiors on an equal level is something typists are entirely unused to. Normally they would hardly ever be asked about their opinion. Those project groups, in which discussions prior to a decision are held, are frequently very

large. The women who are at the bottom of the hierarchy must therefore, in the participatory process itself, be supported in pushing through their interests against more powerful lobbies. It is useful to have an outside speaker who has to ensure that all interests are given space and that the usual hierarchical principles working within the group are uncovered. Only then can a social process of cooperation of all those concerned take place. In the course of this process the conflicting interests of management, clerical and typing staff are also brought to the surface and articulated openly. In order to prevent underprivileged groups from being overlooked, they should be granted the right to veto proposals.

Regular meetings of women from one occupational group are also important where they accompany project groups in order to bring their own interests to bear on the participatory process. The capability for conflict must be learned, especially with colleagues or their own superiors. To fight for her own emancipation is not something that comes easy to any woman. It has to be fought for not only against external but also against internal resistance. For this reason a shared discussion, which acts as moral support, is important as preparation for the project groups. In these preparatory discussions, for instance, the typists are able to collect their opinions in order to play their part in the project groups with more persuasion. It will then be shown that of course those employees involved in typing work do not constitute a homogenous section of staff, but that there are differences of interests. However, they will rather learn how to ascertain their interests through discussions which may sometimes be controversial than through superficially common interests which are nothing but the inability to articulate themselves properly.

3.2. Person-related Work Design

It is becoming clearer nowadays that the introduction of information technology not only provides a new tool at the workplace, but that it leads to an extensive redistribution of work contents and hierarchical responsibilities. The structural gender-specific discrimination of women must be consciously included in order to gradually eliminate discrimination. The objective should be a levelling of hierarchies and the creation of qualified jobs with space for action and decision-making, especially for women in the lower positions of the hierarchical scale. Accompanying training programmes and the possibility for training at the workplace are necessary which build on the many basic qualifications of women from previous job experiences and multi-layered experience of life. This will also make it possible to change the pay entitlement of women accordingly.

There is, however, a widespread inability to take a design influence on the working environment. Tayloristic work organization made influence by design virtually impossible. For this reason the task of the workshops is to give women space and time to think about their work up to now and about their future career desires. When women think aloud about their work situation for the first time, many qualify their work problem at first by saying: "I'm actually quite alright in my job." At the moment where some women start to consciously articulate negative experiences and where they experience concrete solidarity from each other, the sorrow and the experience of being suppressed come to the surface for the first time. At the moment, where women see alternatives, all the daily put downs frequently erupt all of a sudden.

Just talking about it is not enough, however. Through sharing their experiences an analysis of one's own work situation from an insider's perspective can begin. It is important that women gain a wide understanding of their work situation. They should learn to describe the demands, expectations, desires and conflicts at their work place precisely and distinctly. The entire work situation is made the subject of the analysis. Through this it becomes clear which pressures result from the special kind of work organization and the relationship between clerks and superiors and which, over time, have turned into barriers against the process of change. The objective is then to ascertain whether technology can contribute to improving the work situation and which other changes have to come about for that.

Especially in the typical women's jobs, such as typing, it is important that the whole range of work done by them is also perceived by them. Work done by women is frequently not seen as a professional qualification but is denigrated as 'something any woman can do'. Thus, behind the stereotyping of the good female spirit in the office valuable aspects of women's work are often hidden which do not appear in job descriptions, let alone being paid for. By successfully uncovering those tacit capabilities which are needed together and by reassessing them, women develop a professional self-confidence. Taking this as a base they trust themselves to undertake clerk duties which go beyond routine work.

When women become aware of their resources through this they often lack imagination for picturing a re-structured work. It has always been like that, for some of them for decades. How is a woman going to start

digging up those long buried utopias? One possibility is using methods such as fantasy journeys into the 'office of the future' or Future Workshops. With such methods which stimulate the imagination the unspoken assumption to have to continue typing without an end can be broken up. Typist start to develop new ideas about their job and life planning.

I try to support an person-centered work design, which takes into account the individual life situations of women. Instead of normative generalizations the inter-individual differences and intra-individual wishes for change and the interests of employees need to be considered more intensively. The fact that women are generally confronted with two workplaces, has to be recognized in the analysis, assessment and design of work tasks. In the lives of women these two areas cannot be seen separately. There is a field of tension between job and family, and women develop different strategies for coping with this tension and trying to integrate work at the workplace and work for the family. For this reason their requirements as regards designing the job in such a way as to support personal development in line with the individually chosen strategy are different too.

The factors which prevent women from participating on equal terms in the job market can only be broken up when men take on the same degree of responsibility of reproductive work. Therefore the demand and the possibility for taking on this responsibility must be included in the analysis, evaluation and design of jobs occupied by men. This means, that the organization of work has to be such, that interesting and qualified work is not linked to overtime and an absolute availability of the employee's time.

3.3. Explorative Technology Design

In technologically advanced societies the state of the art in technology is associated with masculinity and at work is therefore usually reserved for men. If women increasingly start to use the same technology it stops being 'technology' - the personal computer becomes a typewriter substitute as soon as it is used by women. By keeping this stereotyping men defend their cultural dominance and their position of power by defending the computer as a masculine domain. Women, however, are not left unscathed by the many attributes ascribed to them which keep them out of the world of technology. Many women initially have certain reservations about dealing with a computer. Although they use many household appliances without any problems, many women find the computer sinister. The stereotypes influence the self perception of the women and their own behavior. Thus, as a rule, women think of themselves as being technically inept. Taking these stereotypes and integrating them into their own view of themselves leads them to conform to them in the sense of a self-fulfilling role expectation.

The objective is to break up this stereotyping, according to which women are unable to make use of technology in a sensible way. What is necessary is strengthening female self-confidence, particularly in respect of questions of technology. The aim is to prevent the outside definition from becoming a self-definition. For this women need a room of their own where they can voice and become aware of their own ambivalent feelings. On the one hand they feel equally qualified and on the other hand they feel the difference to the male space of experience. One intention of gaining women-specific qualifications is to make them aware of existing technical knowledge 'picked up on the way' and through this to increase their self-confidence.

To me it is important that women try out a lot thus enabling them to make use of technology in an explorative way. The search for faults especially leads them to getting to know the system increasingly well. Furthermore, the playful joy of experimenting is a creative potential which, in the reality of society, is usually reserved for men. The playful acquisition of computer literacy during spare time is mostly a privilege of men, whereas for women 'private' time is to a far greater degree also working time in the family, as it is they who are largely responsible for household and childrearing duties. And in gainful employment there is hardly any time for trying out something in typical women's jobs, because it is not included in their job description. Many men delegate routine tasks in their professions just in the same way as they do in their private sphere and they therefore have more time to familiarize themselves with the computer.

Depending on the task and individual preference, every woman has to find her own approach to the computer, being more of a planner or more of a 'bricoleur', as Sherry Turkle and Seymour Papert (1990) differentiate. They independently design text blocks, form blanks and address files and set up macros. Regular workshops enable female users to be in a position to develop systems for their own specific tasks with the aid of the PCs standard software, and to adapt the user interface to their own style of working. Using technology in such a superior way women transcend the limits set for them. By getting to know the functional principle of this tech-

nology, women gain self confidence about this technology and, if a fault occurs, are less likely to call for an expert who, as a rule, is a man.

Explorative ways of dealing with information technology require systems which support this approach, tailorable systems. Currently a lot of the frequently used systems in the office do not tolerate errors, force a rigid interaction style and react with mysterious messages to any unusual action from the user. This leads to a fear, that anything but the well-known procedures might produce damage and so the users stick only to the basic procedures they once learned.

As women have the possibility to try out new things on the computer over some time and to make positive experiences, they can bridge the discrepancy between what is assumed about women, how they see themselves and what they actually learn and do by using this technology. Women still have the status of outsiders in the world of technology and because of that they can see more clearly what to insiders is normally hidden behind the veil of habit. When becoming insiders it is important that they keep a rather critical and reflecting view of the machine even with progressing technological qualifications. This can protect women from falling prey to a blind fascination for technology and to lose sight of the objectives of professional work. The object of a technical-oriented qualification of women therefore is the critical assimilation of technological competence. This is a twin challenge. On the one hand women are supposed to increase their radius for action into a male domain, not without criticism however, on the other hand they are expected to bring with them a new understanding of themselves and new tasks for technology.

3.4. The Role of the Work and Technology Designer

When putting humane demands into effect many computer and organization scientists have failed to reach the commendable goal of a work design which promotes personality. All too frequently they see the system to be designed as a machine where just a few knobs need to be turned for the desired humane result to emerge. In addition they frequently remain caught up in gender-stereotypical images. The task of the experts, however, cannot lie in fundamentally changing the social system from the outside, even where this happens under the pretense of humanizing the workplace and representing supposed employee interests. The objective is rather to create the framework, the space and the conditions for employees to take up suggestions for change and alternatives from each other and to develop new initiatives by themselves.

When developing alternatives in work organization and technology many women in employment are caught in their roles and reach the limits of their imagination. They run along established paths of known ways of work organization and have little chance to form an idea of the technical possibilities. The task of technology and organization experts therefore consists of opening new spaces for thinking using the appropriate activating methods. These have to be the structuring element and the analyst suggests unusual combinations, new approaches, terms, possible connections as a trial. This is the only way their expert knowledge can contribute to strengthening the position of employees as subjects in the work process, so that they regain the initiative for action at their workplaces.

Creating comprehensive forms of contribution and women's workshops cannot be left to the initiative of individual female employees. The suggested forms for participation do not continue by themselves, instead the women taking part have to be constantly motivated and they have to be protected from the assaults of the hierarchies. It is necessary for a qualified person, who is trusted by the participants, to accompany and supervise the work of the workshops and project groups, especially where this method of planning and decision-making from below is followed for the first time. It is important to have committed female computer scientists or work scientists in this, who monitor the process of reorganization from the women's point of view. I am presuming here that only women should be presenters in the workshops and the project groups. Owing to the fact that male privileges will have to be relinquished, the women-centered approach always causes conflicts between interest groups. It is here that the moderator should take a clear stand favouring women from the lower positions of the hierarchy.

A female presenter does not design work-places oriented at women's interests qua her gender. It is therefore important that she reflects on her own position, her own values, and that she is capable of entering into the communication process between interlocking unfamiliarities. Women not only experience the same discrimination because of gender, but they also experience different class-specific living conditions, as well as varied individual experiences and socializations. The main prerequisite is a mutual interest on the part of the female presenter and future users that the users should be able to determine their own working and living conditions

and thereby contribute to the elimination of discrimination against women. The aim cannot be a standardization or a one-sided definition of women's interest. Instead the manifold perceptions of reality and the resulting varied and different wishes for action in the work process on the part of women must be taken into consideration.

4. Outlook

The women's workshops meet with a lot of interest in Bremen. In areas where women in employment take charge of their own interest first successes are visible. There they are actively involved in project groups working to change the work organization within the framework of introducing technology. Supported by technology experts, they are developing their own measures for change. Thus 20% of former typing jobs in the Bremen administration have been changed into qualified mixed work positions by now. This is not enough but it is a start. For the mixed work employee it results in a better place on the scale, more job satisfaction and a higher degree of respect towards her own person. The respected and well-paid coordinator positions are also no longer exclusively occupied by men - today there are women working in approximately 30% of these jobs.

Thus, work backed by a women-centered design of technology can improve the work situation of women. Women do not have to remain on-lookers while their work places, most particularly in the secretarial and clerical areas, become increasingly de-skilled and as a result they themselves are subjected to additional stress. Women can act in their own interests if they articulate them and enter into social spaces usually reserved for men. Their actions change when they experience, in one form or other, new possibilities and new possibilities for action.

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