Gender and Professionalisation in IT Fields

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GENDER AND THE EVOLUTION OF IT PROFESSIONS

From a historical point of view, IT professions have their origin in increasing computerisation, especially in the insurance and banking businesses. This stimulated a rise in demand for highly qualified programmers with the ability to take into account the economic side of business gains during the 60s[1]. To satisfy the need for such qualified people, computer science was institutionalised in universities in the 70s. The newly emerging software enterprises, mostly from the U.S., occupied the fields formally served by hardware enterprises and played a crucial role in the development of the IT industry. This included the development of new organisational cultures that were less hierarchically oriented. Moreover, the expansion of the sector and creation of new jobs enlarged the jurisdictional fields of work for software developers. At this stage in the evolution of IT professionalisation, we can find many optimistic views stating that new computing areas would be gender-neutral spaces that provided opportunities for women's participation (Deakin, 1984). Nevertheless, as Griffiths (1988, p. 145) pointed out at the end of the eighties, within a decade computers had been appropriated by men.

With the Internet boom of the 1990s, the sector became even more diversified in its jurisdictional fields, which hindered an institutionalisation of career paths and professionalisation[2]. New occupations arose alongside the technological progress in the information and communication industries. This brought about structural changes that influenced the development of professional groups: First, there was a common dynamic of innovation processes in the IT branch." This was followed by increasing standardisation processes in the working fields and an essential erosion of jurisdictional constancy within the professional groups (Baukrowitz & Boes, 2000). Moreover, the jurisdictional fields for computer scientists, especially the field of application development, were not yet totally monopolised by any particular group because there was "no undisputed dominance of information technological knowledge" (Hartmann, 1995, p. 164). Thus to a large extent, the failure to restrict the jurisdictional fields of computer science is the reason for "the low professionalisation" of the sector (Rothenwald, 2001, p. 17).

From a gender perspective, the first question that arises here is how women participate in this particular development of the IT professions. From a historical perspective, Kritzer points out that the so-called semi-professions (those without a recognized and institutionalised corpus of expertise) have been the main area of women's paid work, while the professions have been male-dominated (Kritzer, 1999). Connected to this division of work, we can also observe a horizontal gender segregation of professions with implications for the inclusion/exclusion of men and women from certain professional areas irrespective of task attributes that correspond to stereotyping in male or female terms. In this sense, Witz (1990, p. 675) refers to "professionalisation projects." Nevertheless, these projects also change over time. Gatta and Ross (2002) point out that changing societal expectations of men's and women's roles, changing skill mixes, declining discrimination, and reduced male resistance to women's entry into work influences the increase of women's presence in traditionally male occupations and also alters employers' expectations.

As we can see from historical discussions of computer science[3], women have always been involved in computing and mathematics. Nevertheless, several authors have shown that women are concentrated in those IT occupation areas with the poorest employment conditions, whereas men are overrepresented in fields that are more valued, such as technical management, systems analysis, and programming (Ruiz Ben, 2003; Webster, 1996; Webster & Valenduc, 2003; Woodfield, 2000). The

question arising here involves the extent to which the professionalisation process of IT occupations represents an opportunity for women to play an active role in the innovation paths of the information society, as well as the gendering or de-gendering practices linked to this process. Our aim in this chapter is to provide an overview of the scholarly literature in the social sciences on the debate about gender and professionalisation in IT fields and sort through the current discussion about the professionalisation of software development in Germany. We present evidence for the gender segregation in IT professions and discuss the key issues that have been addressed by the empirical literature.

BACKGROUND

According to Abbott (1988), professionalisation refers to the expertization of work and the struggles over jurisdictions of expert work. When such jurisdictions become vacant, professions develop and groups of expert workers can convert their work and knowledge into a currency. Particularly abstract knowledge systems are the main currency basis for inter-professional struggle according to Abbott. In IT fields, there is no well-established definition of IT professions, as international reports have stated (Deiss, 2002). As a consequence, the spectrum of existing studies reveals significant variations in the definitions of IT professions, according to the scope of each study and the motivations of its authors (Webster & Valenduc, 2003). Common for the whole IT industry are several factors related to the transformation of work practices: high personal implication; increasing involvement with customers; personal responsibility for continuous training; the need for continuous upgrading of employability; flexibility in work time and location; unpredictable work rhythms, and so forth (Webster & Valenduc, 2003). Moreover, innovation sources and the knowledge systems operating in this industry are highly diverse and increasingly demand soft-skills, which are linked to gender stereotypes. However, some research has shown the persistence of gender bias in the professionalisation process of IT occupations (Huws, 2003; Huber, Reiff, Ruiz Ben, & Schinzel, 2001; Ruiz Ben, 2002, 2003, 2005; Wacjman, 2002; Webster, 1996; Webster & Valenduc 2003).

The explanations for the causes of gender inequalities in the professionalisation process of computing fields cannot be reduced to a simple view of gender constructions. A set of factors lead to the persistence of the gender gap in IT professions, as Webster and Valenduc (2003) note: "time constraints, unequal sharing of housework and children and elderly care, constitution of the harmonisation of the family and professional life as mainly an individual and female problem, total availability model, male environment, low access to training, one way flexibility, under valuation of women's competences and skills." (p. 144) The culture of professional IT engineers is marked by a shared pleasure of both skills: hands-on competence in tinkering, and the abstract competence in logical, analytical problem solving in engineers and software developers' circles (Faulkner, 2000), which results in developing an exclusive, informal culture and professional habits. Software specialists (with men in the majority) build their identities in this cultural context, bridging their early socialisation practices with their professional practices. However, their socialisation differs from that of women, as does their professional motivation in software development (Faulkner, 2000).

This represents the main line of argumentation for explaining the gender gap in computing professions. It emphasizes the correspondence between the gender divide and the social/technical divide, or the division in computing between the physical and the social realms on the one side and the technical realms on the other (Faulkner, 2000; Woodfield, 2000). Nonetheless, from the perspective of the demand for labour, the growing presence of workers with hybrid qualifications indicates that qualification in computer science is not a general guarantee for entering the IT labour market. As Müller (2000) argues, "The association between qualification and career advancement legitimates the meritocratic ideology of organisations. This renders the gender difference as a structure of discrimination 'objectively' obsolete" (p. 20). Moreover, within organisations, several factors support this ideology, such as specialisation or the increasing development of informal structures[4].

On the other hand, according to the actual organisation restructuring Halford and Leonard (1998) argue that personal identities as well as the performance aspects of the employees are rede-