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Kenny, Elyn; Donnelly, Rory

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# **NAVIGATING THE GENDER STRUCTURE IN IT: EXAMINING WOMEN'S EXPERIENCES AND BEHAVIORS**

ETLYN KENNY  
Birmingham Business School  
University of Birmingham  
Birmingham B15 2TT  
UK

RORY DONNELLY  
University of Liverpool Management School, UK

## **ABSTRACT**

Information technology work is heavily male-dominated. How do women navigate this environment? Interviews were conducted with 57 female tech professionals. The findings contribute to the refinement of structural perspectives on gender by casting light on women's efforts to subvert gendered structures and identities in tech and improve their position.

## **INTRODUCTION**

Information Technology (IT) is an increasingly male-dominated field of work, posing a growing global challenge for gender equality ambitions (Tugend, 2017). Seventy-seven per cent of US IT workers are male, while the average for the EU15 is 84% (Tech Partnership, 2016).

Drawing on parallels between theories focusing on gender as an institution and as a social structure (Mader, 2016), we argue that the numerical dominance of a field by one sex leads to cultural and systemic hegemony, which frames individuals' experiences of work and employment along with their career behaviors. Analyses of the structural qualities of gender infer that women are heavily influenced by gendered scripts and reluctantly comply with them. However women in tech are pressing for change so may instead use their agency and minority status to challenge male dominance.

Thus we seek to shed new light on the behaviors of these insiders by investigating two primary research questions: Firstly, how and why does male dominance of the tech employment structure influence the gender identities of women? Secondly, how and why does this affect their experiences of working in IT and their navigation of this environment for work and career development?

### **Gender and IT work**

Existing research investigating how women experience working in IT has primarily adopted a social constructionist lens (e.g. Belgorodskiy et al., 2012). This has helped to elucidate how women experience work in this industry by providing insight into localized interactions between women and men in IT, and indicated how gendered roles may be constructed and performed.

While we very much recognize the social construction of gender, we argue that in the case of the IT industry, the sex ratio is so pronounced that it is instructive for us to examine the

binary categories of male and female and to consider their broader effects on the gendered identities of female IT professionals. We contend that there is something so enduring about male domination within the IT sector that it acts as a social structure, which has causal impacts on how women working in IT understand their gender identity and how this affects their work behaviors.

### **Gender as a social structure: The case of IT**

Andersen (2005) identifies three key positions on gender: (i) it is seen as an institution or regime; (ii) it is performed; and/or (iii) it acts as a social structure. Each of these standpoints usefully highlights the dynamic nature of gender and its relationships with societal structures, human agency and culture. However for this examination of the gendered experiences of female IT workers, we draw on the idea of gender as a social structure.

Both gender as an institution and gender as a social structure provide for robust insights into gender's structural properties (Risman, 2004). Acker's (1990) influential gender regime theory posits that although an organization may present itself as gender neutral, assumptions about gender underpin all aspects of organizational functioning including its structure, job design and remuneration.

Whilst Acker sees institutions as gendered, Martin sees gender as an institution (Andersen, 2005). Martin's model of gender as an institution similarly views gender as a dynamic that shapes ideology, practice, interactions and outcomes (Martin, 2004). The institutional approach to gender is similar in many ways to the idea of gender as a social structure (Risman, 2004). Both position gender as endemic in social life. However, Risman (2004) advances the use of gender as a social structure rather than an institution as a way of conceptualizing gender on the same analytical level as political or economic structures.

Risman & Davis (2013) maintain that the gender structure runs deep within society and results in separate opportunities and constraints for men and women. They use Giddens' structuration theory to provide a framework for understanding relationship between individuals and the gender structure. Giddens contends that although social structures shape action, people also shape social structures. As a consequence, he argues for a duality of structure – that the two shape, reinforce and sometimes change each other but the individual is not always aware of the extent to which their agency is being shaped by their structure (Akram 2012).

Mader (2016) provides a second interpretation of gender as a social structure. He asserts that gender acts a structural category that provides separate and unequally valued meanings for what it is to be male or female. Archer's (2007) work is used to explain the relationship between this gender structure and human agency. Thus the way in which gender is conceptualized in a society and its social settings creates a specific set of circumstances that surround the ways in which actors pursue their goals reflexively (Mader, 2016).

We offer this theoretical backdrop to make sense of this heavily male dominated industry with very specific narratives about female suitability and skill sets. We will demonstrate in the next section some of the contours of this gendered social structure and examine its impacts.

### **Gendering tech expertise in IT**

We argue that IT is male dominated not just through the numerical over-representation of men, but also by the way they get to define tech working cultures, norms and values. Despite the

integral role played by women in the development of computing, the stereotypical view that it is a field best suited to men has become entrenched (Smith, 2013).

Research suggests that a variety of masculinities are evident in computing (Duerden Comeau, and Kemp, 2011), but one specific type of masculinity that is most salient and highly valued in computing is that of the technical expert. This masculine culture is reinforced through a particular type of geek/nerd culture (Isaacson, 2014). It is often more difficult for women to adopt these norms, because it is harder for women to fully embody geek/nerd-like identities (Varma, 2007). This paper seeks to shed light on how women working within computing navigate their gender identity in such a heavily male dominated environment that so strongly preferences 'male' technical expertise.

## **METHODS**

Women working in technically skilled IT roles in the UK were targeted for the research to provide a rich and credible insight into the gender structure in IT. Fifty-seven women were interviewed, with a mean age of 44. The interviews covered the demographic and educational background of participants and in line with the aims of the research their career journey into and through IT, focusing on their experiences as women in various IT roles. Participants discussed female representation and the culture of their organizations as well as how they experienced those workplaces as women. The interviews varied in length, with most lasting between one and two hours. The data were transcribed and analyzed thematically. The quotes presented below exemplify the views and experiences expressed by the participants.

## **FINDINGS**

The findings are divided into two main sections. The first reveals how the women experienced gender as a social structure in IT. The second then examines some of the ways in which the women acted in the context of these structures and some of the implications for the relationship between the gender structure and their agency through three subsections.

### **Experiencing the gender structure in IT**

Analysis of the participants' accounts of the occupational and organizational cultures in which they operated led to the identification of key recurring characteristics of these cultures. The cultures were male-centric and prized male technological expertise. . These cultures were marked by male-held assumptions about women's inherent lack of technical ability. Although the women sampled were skilled and successful computing professionals, clients and male colleagues regularly questioned their technical competence.

In place of strong technical skills, the participants explained that they were regarded as possessing strong communication, people management and organizational skills. These skills were perceived to make them better suited to hybrid roles – those that involved some technical knowledge but also strong organization, communication and people skills.

Many of the women assimilated these views by behaving in expected ways. The degree to which male norms were embedded meant that they faced substantial pressure to accept imposed patterns of behavior. This did not mean that they had to act like males. Instead they had to learn how to act as females in a male environment by adhering to established and emerging

scripts, which positioned them as outsiders or guests rather than individuals who naturally belonged in IT. To do this, they felt the need to maintain the status quo rather than vociferously pressing for change.

Male dominance meant that they were often excluded from activities or events that offered referent power and informal influence over decision-making. Surprisingly, much of this exclusion was of limited concern to the women sampled, as they indicated little interest in permeating male dominated social interactions and structures. However, this exclusion meant that they felt the need to continuously demonstrate and prove their belonging in IT. This was because their fit and expertise was often drawn into question.

### **Women's agency in the gender structure**

In this section, we discuss how the gender structure helps shape the gender identities of the women and how they navigate their careers within IT. We discuss how the gender structure aids the formation of a complex relationship between fit and femininity within IT. We relate the gender structure to how the women frame scripts around 'female strengths' in relation to IT work. We also use these findings to demonstrate how they navigate the 'geek culture' in IT as female professionals.

*Femininity, fit and IT.* Many felt that, unlike men, they could not take their place in IT for granted. This meant that they experienced greater pressure to always exhibit a high degree of technical competence and be better at their jobs than their male counterparts. In addition, they faced pressure to deemphasize their sexuality and any gender differences along with displays of emotion. *'At work, people would describe me as very driven, very tough ... And I'm actually not like that. It's a mask, an act if you like, that has developed over the years, because I've had to, and because that works'* (Justine).

Some also felt the need to play down their femininity in the way that they dressed. This was due to conformity pressures and the desire to fit in. Where they did exhibit their femininity, some of the participants felt pressure to stick to existing scripts and to only display an approved type of femininity. Otherwise, this could generate frictions at work. *'I am quite audacious and outspoken, so I'm sure that that rubs people up the wrong way sometimes, when they think, she's not acting the way a girl should be'* (Abigail).

To get by as outsiders, the women were expected to display certain types of behavior as there were predefined rules or norms for women to follow. However, the women saw value and strength in their femininity and wanted to bring it with them to work in discrete ways. This was because it constituted a core element of their self-identity. *'Occasionally, I'll realise I'm the only woman in this room ... perhaps because of that; I always wear nice dresses to work, things like that. I just think, "Well, why shouldn't I assert my femininity in the place that I work?"'* (Wanda).

As a minority, they sought to preserve their femininity by carving out a distinctive identity. This enabled them to differentiate themselves from their male peers. *'I don't want to be like a man ... let the boys do their thing. I bring a different flavour and I'm proud of that'* (Brenda).

Many did this through the more formal presentation of their professional identity in comparison to their male colleagues. This was partly because this reinforced their professional credibility. The women did this because despite the prevailing narrative within the sector, IT was not solely male. Some women worked to subvert the notion that femaleness and technology were

in opposition and that the two could not co-exist. Femininity and IT, as they saw it, did go together.

The male dominated nature of the sector influenced the way the women acted. Yet the way they conceptualized and expressed their femininity at work was not completely subjugated to male norms. Their own conceptions of their femininity also influenced their conceptions of gender in IT and their consequent behavior. They were not willing to become an 'it' in IT.

*Female 'strengths' in IT.* Some participants indicated that they had adapted to what would be characterized as essentialist conceptions of female IT professionals strengths lying in more people and process orientated domains rather than the hard core technical work. They accepted some essentialist views and recognized their value in terms of promotion to managerial roles.

There were also more subtle norm-based pressures that made it appear natural and normal that women were found in IT roles that demanded the use of people and organizational skills. However, the participants indicated that women were sometimes strongly encouraged or pressurized to take on such roles and some women indicated that they had to fight to retain a technical focus to their work.

The participants also recognized that moving women into hybrid roles could dilute the presence of women in technical roles, which were more highly valued and rewarded. Therefore, they adopted a dynamic strategic approach to the salience of their gender identity and its use. This enabled them to navigate the increasingly male dominated occupation they were faced with.

*Geek and female mismatch in IT.* The geek/nerd masculine culture included the need to be both knowledgeable and obsessive about tech, which the women found challenging in different ways. Some just found it more difficult to relate to and so ended up feeling alienated. Others argued that the geek/nerd culture was less valuable than many in the industry seemed to think and that it could lead to a lack of productivity. They argued that having a more instrumental relationship with technology could be more effective and waste less working time.

Not all of the women experienced this geek culture as negative. A few felt that geeky males were actually easier to work with than less geeky males as they were keener to collaborate and share their knowledge. Interestingly these women tended to be those with a high degree of technical ability and worked as managers of largely male technical teams. These women had proven their technical prowess and were in positions of authority over technical males and felt accepted.

However, the agency of these technical women did not lead to radical changes in the gender structure, because they were absorbed into the existing narrative in the following ways. Firstly, although technical women exist, they are viewed as a rarity in IT. Some of the older women commented that this was a more recent development and when they had started their careers in IT there were more women in not only computing, but also technical roles. Secondly, a few of the women who performed more technical work sometimes found it difficult to be viewed in the same way as other women and felt that others did not accord them the same level of femininity.

Drawing on the accounts of the participants, women recognized as technical were perceived by male colleagues to be particularly special, so they were often steered towards roles that combined technical and managerial skills, which is why the women considered themselves to be more welcome or accepted in these roles. They reinforced this view by acting as

'superwomen' to some extent and also considering themselves different, more special than men and many other women.

## **DISCUSSION AND CONCLUSIONS**

Our work shows how the reflexivity of the women led to the reinterpretation and a renegotiation of gender identity within IT. This enables two key contributions to existing knowledge. Firstly, rather than necessarily becoming an 'it' in IT (Adams et al., 2006), women in IT strategically display their female identity on a dynamic basis between being an 'it' and a woman in IT. The gendered structure communicated a mismatch between their female gender and their presence in IT. In terms of their physical presence, the women initially felt the need to blend in. However over time, for those women for whom it was important to display femininity, a re-assertion of their physical feminine presence manifested.

Secondly, the shift towards hybrid roles for women and some of the underlying essentialist views around female strengths and capabilities were both accepted and rejected by the women themselves. Paying attention to the way in which the gender structure was influential in their agency, we could argue that these essentialist beliefs emerged from their interactions with their working environment. To some extent this appeared to be so. However their beliefs were also shaped by wider gender-related cultural factors that went beyond the gender structure in IT – indicating that the relationship between the gender structure and their agency may be more down to a dualism (Archer, 2007) rather than a duality (Giddens, 1984).

This also gives rise to the idea of how it might be possible for the women to effect change. It appeared that, for many of them, their technical prowess was either seen as an anomaly or questioned. Combined with the pressure and expectation for them to eventually move to hybrid roles meant that it was difficult to see how the gendered structure can be properly overhauled without serious collective effort.

Limitations associated with the study include the acquisition of a single sex perspective. Future researchers ought to observe gendered behaviors in IT settings and survey men about their attitudes and behaviors towards women and see if and how they are changing. Subsequent research should also examine how working as an IT contractor moderates women's experiences and why female contractors work on this basis. It may be that they do so because they do not feel excluded by male dominated organizational environments or wish to operate in an anti-structure (Turner, 1969) outside the established gender regime structure in IT. Conversely, it may be that rather than being liberated from the constraints of male dominated environments for employment, many female IT contractors feel greater pressure to conform to male norms to fit in and gain work.

## **REFERENCES AVAILABLE FROM THE AUTHORS**