18. Women’s Experience of Role Models in IT: Landmark women, substitutes and supporters

HILDE G. CORNELIUSSEN
Vestlandsforsking

GILDA SEDDIGHI
Vestlandsforsking

CAROL A. DRALEGA
NLA Mediehøgskolen

ABSTRACT Where do women working in IT find role models? This is the question we ask in this chapter, which presents a study of women in IT careers. Within a framework of feminist technology studies and gender seen as social practices, we explore the women’s experiences with role models through qualitative interviews. A lack of female role models is central in the women’s narratives, and we develop a model illustrating the various responses to this lack.

MERKNADER
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18.1 INTRODUCTION – WOMEN IN IT CAREERS IN NORWAY

In this chapter we discuss model as “role model” and, more specifically, the perception of role models among women in IT careers in Norway. Although Norway scores high on gender equality in international measures (World Economic Forum, 2018), the labour force is marked by a strong horizontal gender segregation and differences in the gender breakdown across occupations. 23% working in the IT sector in Norway are women, according to Statistics Norway. A similar situation is found across most of the western world (Buse, 2018), while some countries in other parts of the world, like India, have managed to turn the trend by recruiting more women (Raghuram et al., 2018). In Norway there is, however, also a persistent gender division in higher education, with less than 25% women in computing and less than 10% in some IT programmes (SO, 2018). Research has identified that women made up a higher proportion of computing students in many western countries in the mid-1980s than they do today (37% in the US in 1984, cf. Accenture, 2016; Corneliussen, 2003b; Sharp et al., 2012; Varma, 2009). Furthermore, while 20% of 15-year-old boys expect to work as ICT professionals, only 2% of girls expect the same (OECD, 2016; UNESCO, 2017). The statistics for Norway show a persistent struggle to recruit women to IT over recent decades, suggesting there is a long way to go before reaching gender parity in IT (Vabø et al., 2012).

It has been claimed that women need female role models to navigate working life (Catalyst, 2003), particularly in fields with a male dominated culture, such as IT (Björkman et al., 1997; Kekelis et al., 2005). IT is not only dominated by men in numbers, but also associated with men and masculinity (Grint & Gill, 1995) to the effect that “most girls and women do not even consider a career” in the field (Faulkner, 2000, p. 94). The male dominated culture of computing has given rise to stereotypes making a career in IT appear less attractive for girls. It has also reduced women’s visibility in the field (Ensmenger, 2010; Turkle, 1988).

Qualitative as well as quantitative research has provided examples of female role models having a positive effect on girls’ early association with professional fields (Dasgupta, 2011; Lockwood, 2006). This indicates that few female role
models in IT might be one of the obstacles for girls aiming for a future career in IT (Blum et al., 2007; Cheryan et al., 2009). We want to learn more about what the situation is for women who have chosen to pursue a career in IT, and we ask: Who do the women identify as role models while navigating an IT career? To which degree is gender important for their perceptions of relevant role models? Based on interviews with women engaged in IT work in the western part of Norway, we analyse how they perceive the notion of role model in relation to their own career. Analysing how and where the women have found role models, we saw that many of the women’s narratives reflected a lack of female role models in IT. Based on this, we present a model illustrating women’s responses to this lack. The model contributes to further our understanding of how women navigate the gendered landscape of IT, thus supporting an increasing need to raise gender equality in a highly gender segregated field.

18.2 LITERATURE REVIEW – ROLE MODELS IN THE MALE DOMINATED FIELD OF IT

Although IT is a field characterised by horizontal as well as vertical gender segregation (Branson, 2018; Vabe et al., 2012), our focus is on the first. Horizontal gender segregation refers to an unequal distribution and under/over representation of women and men in educational fields and professional sectors (Meuldens et al., 2010). Women are underrepresented in IT work across most of the western world. We will revisit studies that have contributed to our understanding of the male dominated culture in IT, women's invisibility in the field, and the relation between this and role models for women in IT. Let us first clarify how we understand role models in this study.

A common way to define role model in recent research, is as “individuals who influence [children’s, adolescents, ‘and young adults’] achievements, motivation, and goals by acting as behavioural models, representations of the possible, and/or inspirations” (Morgenroth et al., 2015, p. 468, quoted in Olsson & Martiny, 2018, p. 2). Shapiro et al. include a perspective of professional identity, by defining role models as “individuals whose behaviours, personal styles, and specific attributes are emulated by others” in a way that “is a contributing factor in the construction of professional identity” (Shapiro et al., 1978, p. 52). Morgenroth et al. further adds to our understanding by defining the role model’s function as “a way of motivating individuals to perform novel behaviours and inspire them to set ambitious goals”, in particular for “members of underrepresented and stigmatized groups” (2015, p. 1). Aiming to be even more specific on “what a role model may embody
that can be imitated by others", Grande (2018) divides between external achievements, like a degree or position, and more inherent aspects of the individual as features that can be imitated. None of the definitions mentioned above emphasise the role model or the role aspirant’s gender. Gender is, however, a vital category when aiming to understand women in a field like IT, where the hegemonic images are closely related to masculinity. We will complement and add to the above understanding of role models with insights from feminist technology studies and theories emphasising gender as a situated social practice.

The “computer science geek”, often portrayed as “antisocial white male”, might not appeal “to either men or women, but it is likely more unappealing to women” (Hayes, 2010, p. 267). Few visible women in IT makes it less likely for girls to imagine themselves in an IT career (Black et al., 2011; OECD, 2016). It can be challenging for women to develop a sense of belonging in IT, illustrated by a woman interviewed by Kitzinger et al.: “I think if you dress too smartly, too nicely, too feminine […] you are at risk of not being taken seriously” (2008, p. 18). Cheryan et al. suggest that “stereotypes communicate to women, but not to men, a lower potential for success in the field” (2011, p. 660). Negative stereotypes might work as a barrier for women’s entry into IT, and women “may derive particular benefit from the example of an outstanding woman who illustrates the possibility of overcoming gender barriers to achieve success” (Lockwood, 2006, p. 36). Consequently, it has been argued that female role models might be important for girls to gain an interest in computing (Blum et al., 2007; Cheryan et al., 2009) as well as for girls to maintain this interest (Kekelis et al., 2005).

One reason for women’s difficulties to identify female role models in this field, is the seemingly invisibility of women in IT, including in computing history. Since the 1990s, historians have documented women’s contributions in computing as programmers, software developers and machine operators during the 1940s, -50s and -60s (Abbate, 2012; Gürer, 1995; Hicks, 2017; Light, 1999). Abbate’s study of women working as programmers in this period, shows that among some, programming was considered women’s work (2012). Since then, computing has developed into a distinct professional field. Simultaneously it developed into a field associated with men and where women were increasingly marginalised and their contributions became less visible, or even “forgotten” (Ensmenger, 2010; Ensmenger, 2012; Hicks, 2017). Female IT experts still experience a relative invisibility, for which Faulkner developed the notion of the in/visibility paradox, capturing that “women engineers are simultaneously highly visible as women yet invisible as engineers” (2009, p. 172). This is a paradox that can be explained with the perception of engineering as “gender in-authentic for women”, Faulkner sug-
gests (2009, p. 169). Individuals representing a minority group, like women in IT, might find it difficult to “impersonate” the field (cf. Puwar, 2004) and to be identified as a role model. Or, as phrased by Hofstede, women simply “do not carry the symbols” required to be perceived as part of “men’s culture” (2003 (1991)).

Do women need female role models in male dominated fields like IT? Research gives incongruent answers to this. Some studies find that female role models have positive effects, while others show less clear, or even negative effects, in countering gender stereotypes for women in male dominated fields (Drury et al., 2011; Markussen & Roed, 2017; Olsson & Martiny, 2018). Women in male dominated fields might appear as “successful” role models, however, they might also appear to have crossed a boundary and become “absorbed by the masculine culture” (Corneliussen, 2011, p. 97). Dasgupta finds that female role models benefit women in STEM (science, technology, engineering and mathematics; 2011). Cheryan et al. rather find that both male and female role models may be effective for recruiting women to STEM, while women react more negatively than men to role models who personify STEM stereotypes (2011). Female role models are also more important for retention of women who are already in STEM fields (Drury et al., 2011), as it might protect women against negative stereotypes that raise doubt about their abilities in STEM fields (ibid.; Stout et al., 2011). Olsson and Martiny found that time-limited interventions had less effect than “long-term exposure to counterstereotypical role models”, like mothers in non-traditional jobs (2018, p. 11). Despite the inconsistent findings, Olsson and Martiny conclude that “interventions that aim to promote counterstereotypical behavior can be effective at any point in a person’s lifespan” (2018, p. 11). It is also clear that the gender egalitarian Norwegian culture does not come with a vaccination against gender effects in role models. Markussen and Reed, studying gendered peers’ influence, found “strong and heavily gendered peer effects” among Norwegian entrepreneurs, suggesting that “[w]hile men are more influenced by other men, women are more influenced by other women” (2017, p. 1).

Although the effect of female role models might be ambivalent, the unequal visibility of men and women in IT further contributes to the gender segregation in the field. Thus, our interest is not so much in the effect of role models, but rather to explore where and in whom women in an egalitarian country like Norway find relevant role models for a career in IT.
18.3 THEORETICAL FRAMEWORK – DOING GENDER

While research is incongruent in the answers to whether same-gender role models are effective, and unclear in answering why some role models are successful while others are not, these studies nevertheless demonstrate that such challenges apply to women in IT, not to men. It is mainly women, not men, who are either in need of female role models, or who might be put off by certain types of role models, while men are less affected by role models’ features, whether that refers to stereotypes or gender (Cheryan et al., 2011; Drury et al., 2011; Lockwood, 2006). When same-gender role models appear negative for women, they do so because they fail to embody the male norm or the masculine symbols in the field (Olsson & Martiny, 2018). One reason for the incongruent findings related to the gender of role models, might be explained with the fact that there are as many differences within the category of women as there are similarities between the categories of men and women (Connell, 2002). Our study is based on an understanding of gender as a social construction and as something we “do” in social interaction (West & Zimmerman, 1987) as we perform gender according to cultural expectations (Butler, 1993). Not only people, but also technology and occupations can be associated with gender (Scott, 1988; Wajcman, 2004).

For the analysis below, we find “doing gender” in West and Zimmerman’s conceptualisation useful to revisit (West & Zimmerman, 1987), as they emphasize gender as a situated social practice, rather than “men and women as self-evident categories” (Nentwich & Kelan, 2014). West and Zimmerman theorize gender as a “routine accomplishment embedded in everyday interaction” that contributes to the organisation of life with reference to sex-categories (1987, p. 125). This organization of social life is developed out of repeated interactions and processes of socialization, where individuals are assessed for their gendered performance in both institutional and interpersonal relations. Exercising a profession is also about adhering to professional norms. In fields dominated by either men or women, these norms are often associated with gender. West and Zimmerman emphasize that “one can never not do gender” (Nentwich & Kelan, 2014, p. 122). Gender is, however, not fixed, and it has been suggested that “[i]n ‘doing’ engineering, women often ‘undo’ their gender” (Powell et al., 2009, p. 411). The challenge of bridging gender and professional identity is highlighted in the theory about “stereotype threat”, which Steel and Aronson describe as the “risk of confirming, as self-characteristic, a negative stereotype about one’s group” (Steele & Aronson, 1997). While this is found to be particularly challenging for girls in male dominated STEM fields (O’Dea et al., 2018), female role models can “reduce stereotype threat because seeing a successful in-group member relieves the burden of
personally representing women in these negatively stereotyped contexts” (Shapiro & Williams, 2012, p. 178).

Just like a role model might work as a point of identification, encouraging role aspirants to act in certain ways, also gender creates points of identification. Butler’s theory of gender as performative describes gender identity being shaped through repetitive actions, suggesting that gender is continuously constructed when the individual “performs” the role that they aspire to (Butler, 1993, 2004). Race- and gender-matched role models are sources of information to identity as well as identifying what is possible for an individual as a member of a specific group in a specific environment (Griffiths, 1995; Robst et al., 1998). This suggests that “doing IT” involves doing gender when the majority norm in IT is perceived as masculine. Our analysis of the women’s perceptions of role models is relevant for understanding to which degree women are able to identify points of entry that invite them as women to IT work, or whether they rather experience being a woman in a male dominated field as “a contradiction in terms” (Nentwich & Kelan, 2014, p. 128). With this theoretical framework we approach the question of women’s experiences of role models in relation to IT also as a question about how the gender-IT relation is constructed in Norway, as we aim to analyze the women’s experiences of finding suitable images to associate with in the field of IT.

18.4 METHODOLOGICAL FRAMEWORK

The empirical material for our analysis is interviews that took place during 2017–2018 with 28 women in IT careers in western part of Norway. The informants were identified and recruited partly through institutions and companies in the field of IT research and innovation, and partly through social media channels for women in technology. Most of the women were born in Norway, though women from other European as well as Asian countries also participated. They were between 24 and 59 years old. One has a bachelor’s degree, 18 have a master’s degree, and nine have a PhD. 17 of the women have IT education, as the main topic or in combination with other disciplines. The remaining women have education in non-technological disciplines and found their pathways to IT work through working life, by choice or by coincidence. Only a couple of the women work in traditional tech companies, while most of them work with IT in academia, public or private sectors, in disciplines or companies that traditionally have not been considered technological. Their work includes programming, development and implementation of digital solutions. Some work as translators between the “tech people” and users, some are lecturers in higher education, some are entrepreneurs,
and some are leaders for technology development. All informants have been given pseudonyms.

We aimed to obtain “rich data” and “thick descriptions” through in-depth interviews (Geertz, 1973). We approached the question of women in IT careers from a professional-life-history narrative perspective that included questions about education, occupational history, family, friends and leisure time activities. The interview guide was adjusted along the way, and one of the questions added was about role models. We have excluded the interviews where role models were not a topic from the current analysis, which then is based on 22 interviews.

The interviews were recorded and later transcribed. While our analysis is anchored in a tradition of gender and technology studies, the practical analysis was guided by Charmaz’s grounded theory (GT) approach. This involved working through stages of coding parts of interview transcripts and writing memos as small notes about the codes and connections in the material, challenging and developing our understanding of codes, structuring the codes into groups and developing the categories throughout the process (Charmaz, 2006). The present analysis is based on the categories: gendering of IT; identity work in IT; and the notion of role models, including the lack of role models, in IT. The aim of the GT analysis is to expand our theoretical understanding of women’s perceptions and experiences of role models in IT.

18.5 FINDINGS – WHERE DO WOMEN IN IT WORK FIND SUITABLE ROLE MODELS?

The women referred to role models with different features, in various contexts, as male and female. Some, but not all role models in their narratives fit the above definitions, while others rather were supporters, networks and mentors. We consider all these different features and qualities of role models as we start to unpack what role models means for the women.

Starting by considering some of the patterns in the material, we find that family members are important as role models, as Maja shows: “My mother also has a similar education from university […] I have perhaps picked up on this interest from my home”. Many of the women describe role models in terms of inherent aspects, like Nora’s reference to her father, who was “solution oriented, and I am the same” and a model for competency: “I can repair things. When I was a child, I had a toolbox and followed my father, because he repaired cars himself”. Beate, also pointing at her father, refers to aspects such as personal attitudes and behaviour: “he was very positive in his way of being, always in a good mood and
worked hard and never gave up”. Thus, we find that the first role model the women think of when we ask are often people they know, and many of the women start by referring to the closest role models they have: family members, from parents to sisters and grandmothers. Our findings are in line with previous research that has documented that parents have a vital role in the early motivation and encouraging girls’ choice of career path (Hyde et al., 2017). A different type of role model is more distant, often female and mentioned in terms of achievements, like Elisabeth illustrates: “the fact that we have a woman as Prime Minister, I think that is extremely important. […] They are women in positions of power”.

While the women answer our question about role models with narratives about male as well as female role models, from near and far, few of these role models are from the field of IT. In the language of Grande’s model (2018), most of the male relatives are mentioned as models for certain individual aspects, as illustrated above, not as IT workers or similar; and male colleagues are more often described as mentors or supporters rather than role models. The female role models are only in a couple of occasions mentioned as positive role models for a career in IT (like Maja’s engineer mother). A notable pattern in these narratives is rather to point at a lack of female role models for the women to associate within IT work. Although we should take care not to assume that all women need female role models, many of the women explicitly expressed missing this, for example, Jorunn: “I missed having female role models in my education as well as in my early working life”, and Berit: “I haven’t had any, because often there haven’t been anyone before us, in a way”. To Berit, a lack of gender match makes someone less interesting as a role model: “I have a cousin who was a civil engineer, but he’s a boy, so…”, and “When I started in the first company, I was working with boys only. They were okay, but they didn’t become role models the same way”. Like the pattern we found among many of the women, she starts by searching for role models among her family, where she finds none. She then dismisses the potential role models for technology she could find, because none of them were women.

Berit is not unique in our material. Nineteen out of the 22 women identify relevant role models as women, by referring to key actors like mothers, female leaders and women who are well known in Norway, such as the female prime ministers, illustrated by Karin:

I have grown up with my mother, right, and she has been in leading positions since the 1980s, and she has always talked about how she was one of three women at engineering education in her time. I have been affected in that way, through the Norwegian female prime minister, and I grew up thinking that
women can do anything. Perhaps they need to push it a bit, try to reach high positions. I was asked about role models the other day, and I think that people like the female prime minister, my mother and [a female leader], right, they are the type of women that I admire.

Karin illustrates how women’s visibility in certain positions, as leaders and, ultimately, the prime minister, contributes to the perception of women’s belonging in such positions. This points us in direction of the next question: how should we understand the various references to the role models’ gender?

Educational fields and workplaces can be gendered through the overrepresentation of one gender (Kanter, 1993 (1977)). In such cases, doing the job might require “a performance which is often cross-referenced with gender and which entails doing gender identity in a certain way” (Nentwich & Kelan, 2014, p. 125). Our analysis suggests that this also affects prospective role models, as Berit illustrated. Fifteen of the 22 women have attended higher education in computing or engineering, where women are a minority among men, while nine come from other less male dominated academic fields or have their education from countries with a higher participation of women in STEM disciplines. Liv, who has recently finished her master’s in technology, reflects with sadness on her bachelor program with only four women in the group of 46 students, reflecting the low numbers of women in computing in Norway. Regarding gender structures in working life, the picture is more varied. Most of the women are currently working in a rural region of Norway in companies and workplaces with a more equal distribution of men and women. Fourteen of the 28 women have found work in IT companies and institutions, while the other half have found work in other industries, reflecting the ongoing digital transformation happening across sectors and industries. In the first group, five have found IT work in IT related institutions in the public sector, five in computing departments in academia, while only four have found work in IT companies in the private sector, and out of them, one as an entrepreneur in her own company.

The tendencies we see here support other studies, which have shown that many women find IT work outside the traditional IT sector (Crump et al., 2007; Kantar TNS, 2018). There are several likely reasons for this; for instance, a more family friendly regulation of work time in public sector (Schöne, 2015). However, this might also be an example of women “voting with their feet”, opting out of the most male dominated IT workplaces (Faulkner, 2000). The net effect for most of our interviewees is that they do not experience a male dominated work environment. The lack of female role models together with this tendency might indicate
that accessible images of who fits IT work have not had the effect of encouraging, motivating or helping the women into the more male dominated private IT industry. Instead, the majority of the women we interviewed found IT work in fields and sectors where “doing gender” and “doing IT” is not experienced as a “contradiction in terms” (Nentwich & Kelan, 2014, p. 128) the same way it appears to be in the male dominated private IT industry.

Working life is, however, not only gendered through the majority, but also through the way in which women are treated differently from men (Riffle et al., 2013). Helene describes the leader having a vital role: “I have experienced that with certain types of top leaders, it is very difficult to be heard as a woman. Just because I have the wrong appearance. I have less impact because I am too young and too... because I’m a woman.” Karin believes that there are different standards for judging and evaluating men and women’s professional contributions that means women have to work harder than men: “I have got an angrier style recently, I am sick and tired of the men who get away so easily with anything.” Gender combined with age produces a play of power where young professional women experience that their authority vanishes, as Karin illustrates: “I think it meant absolutely nothing what I was saying. Because I had the wrong age and the wrong gender. And then you just won’t be heard.” The play of gender power in these cases can feel quite demotivating for their professional engagement:

The IT leader and I were in a meeting with a supplier, a full day with meetings. At the end of day, he comes over to me and puts both his hands on my shoulder and says “Oh, [male leader], you have got yourself a clever girl!” Then I get sort of “oh”. Right there, everything I had done that day just evaporated and I realised that I had been sitting there as his clever little girl. (Jorunn)

With a simple comment referring to gender, Jorunn’s professional achievement was erased. She is not alone with stories of how gender enters power mechanisms in working life. Several of the other women also describe experiences making them “angry”, wanting to “hit” back, while realising that they just have to “get on with it”: “We are a group of women who are cheering each other on, and if there has been a ‘boys’ club’ incident, I tell them that we don’t care, just do your work and show that you can deliver, and then it will be all right” (Nora). Episodes like these are threatening women’s belonging and illustrate how gendered patterns of working life creates different experiences for men and women. This might help us to understand the connection between female role models and stories about gender structures in working life. The women’s example highlight that being a man work-
ing in IT is not the same as being a woman working in IT, which has been documented in other studies as well (Adam et al., 2005; Corneliussen, 2003a; Holtzblatt & Marsden, 2018). This brings us to the next main finding of our analysis. When we look more closely at the women’s articulations about role models, they can be seen as responses to a lack of female role models.

18.6 A MODEL OF RESPONSES TO THE LACK OF FEMALE ROLE MODELS IN IT

“I can’t really say that I have had any role models that I could copy”, Helene says. Nora turns the question back to us, wondering if we know about role models for women in IT. Four of the women point at the female prime ministers in Norway, while others just state that they missed having female role models. Many of the narratives reflected a lack of role models in IT that the women felt they could associate with, simultaneously suggesting alternatives, mainly in the shape of women in other fields and positions. Thus, the interviews illustrated a set of responses to a lack of female role models in IT, presented in the model below. Our model is inspired by Grande’s “model of role models.” Above we saw that Grande’s model revealed some of the gender patterns in our material. However, Grande’s model was not a good fit for our informants’ narratives, as they were more characterized by the responses to the “lack” of female role models. Building on Grande’s model, we developed a new model mapping these responses, as shown in figure 18.1.

**FIGURE 18.1** Responses reflecting a lack of female role models in IT.

There are three types of responses to the lack of female role models: first, simply recognizing the lack of role models by pointing at a “void”; second, finding substitute female role models, and third, recognizing alternative supporters of both genders. The responses are not exclusive; the same individual might refer to several of the categories above.
The void refers to responses simply pointing out the empty space where there should have been women. Jorunn, who has a degree in computing, told us: “Both in education and in my early working life I missed having female role models.” The “void” is formed not only by the low proportion of women, but also by the difficulties in establishing female role models in a male dominated field (Faulkner, 2000). Thus, when for instance Berit found it difficult to point at a role model “because in a way, there haven’t been anyone before us”, we should not assume that she believes that she is the first woman in computing. Rather, we interpret this to mean that she has not seen women in such positions among her nearest family or social circle, simultaneously reflecting that there are no visible, notable women in IT or computing history that “everybody” knows. A similar interpretation can be suggested for Beate’s claim “I didn’t have a role model in that sense, because I just had to do my own thing. I didn’t want to do things that others did, and then there weren’t many role models”. Although we should be careful not to assume that everybody wants or need role models – and she might simply refer to that, her articulations include a combination of a gendered working life and her untraditional gender choices. Thus, we can see also this as an example of how the gendering of IT produces structures, stereotypes, and symbols that associate IT with men to such a degree that it might give women a feeling of being alone in their choice of a career in IT. These examples illustrate that, independent of the effects that female role models might have for women’s entry into male dominated fields, the low number of women and, consequently, the lack of female role models, shape the narratives of the women.

The second type of responses refer to substitute female role models. Characteristic for these articulations is that the women start by doubting that they had role models in IT, before suggesting alternative female role models: “No, I don’t think so, there is more like economists and stuff like that, in relation to leadership” (Nora). These “other” female role models can be grouped into landmark women, women from other professional fields, and networks of women. The landmark women have acquired notable and well-known positions in Norway and can act as role models for many different women: “the fact that we have a woman as a prime minister, I think that is extremely important” (Elisabeth). References to women in “other fields” illustrate the importance of women’s presence – as “door openers”:

I have also been lucky to have good female role models in this company […]. That has been important as a door opener, the fact that we have a woman in the national top group of leaders within this type of production. I think that makes things easier. It is not necessary, but it makes things easier. (Elin)
Jorunn missed role models, however, when she moved out of programming, she found relevant role models: “In the start I was working more with programming and stuff, but now I have showed that I can also lead. […] And I have found more and more good female role models, locally, in that field.” As we saw above, most of our informants found new spaces for working with IT, outside the traditional IT industry. Many of them also have positions combining IT with other disciplines, or they enter leadership positions. Our analysis suggests that when entering these hybrid IT positions, it is easier to recognize female role models.

The third type of “substitute female role models” is also about the presence of women: networks of women. When we asked Helene if she had role models, she answered:

Both yes and no. Not as much as I wish I had. I have a network, a close network of girl friends in leading positions in this region, and we use each other a lot. We have become close friends over time. And I use them as mentors and role models, but I haven’t had any kind of mentors or role models in the jobs that I have had.

What she could not find at work, she found in her personal network of women. The network has the advantage of presenting local and achievable role models, both important qualities for successful role models (Marsden & Holtzblatt, 2018; Olsson & Martiny, 2018). While lacking access to some of the men’s networks – most extremely described by Deniz, who rejected the network of her male colleagues that on occasions had the sauna as a meeting place – several of the women have their own network that offer support and arenas for sharing good and bad experiences, and even to find mentors who can give advice.

Yet another distinct way that the women answer when asked about role models is “no, but …”, and then pointing to other types of supportive individuals, many of them male and some of them rather labelled mentors. Thus, finding supporters is the third response to a lack of female role models. The supporters differ from the “substitute role models” as they do not entirely fit the definition of role models as someone who “embody [something] that can be imitated by others” (Grande, 2018). It is not so much their simple existence (as examples) that triggers the role as “supporter”, but rather that they have knowledge or a position that help the women. Helene, who said she missed having role models, found support in a male leader: “you could say that he has been a role model, or at least a mentor that pushed a little.” Thus, this notion of someone to copy in a very literal sense, seems to push the question of role models into an answer about mentors. Others refer to
the necessity of having friends, family, husbands and partners that they can talk with, and who can “provide me with support and sometimes with corrections, put you back on place if you go wrong” (Amanda). As we can see, persons referred to in this category do not really qualify as role models, however, they are still important as individuals who provide guidelines that the women can use to navigate their professional lives. We have included them here because they appear in the answers to the question about role models, illustrating how researchers’ theoretical starting point is not always shared by informants (Wyatt, 2008). Thus, we argue that the lack of relevant female role models is partly responsible for the importance of the supporters.

18.7 DISCUSSION – “DOING GENDER” WHILE “DOING IT”

It is important to emphasize that our analysis does not say anything about what men and women contribute in IT. The women rather reject the idea that gender means anything for the actual work they are doing (“I don’t see gender at work”). Thus, our analysis does not account for what the women do, but for how they find a basis for a sense of belonging in the field of IT, seen through the concept of role models. The main finding in this study is perhaps no surprise: women have difficulties in pointing at role models for their IT career. The first place that the women look for role models is among family members, and second among people they know and who belong in their close circuits or work context. When responding to the question of role models, many of the women start by rejecting that they had any female role models in IT, before suggesting the alternatives: by pointing at the void, by introducing substitute female role models and networks, and other supporters, men and women. Men are either mentioned as models for individual “aspects”, or as mentors and supporters more than role models. Hardly any of the women mention anyone working in IT when they talk about role models. We see this as reflecting the challenge of bridging the female “doing gender” with “doing IT.” On the one side, female role models in IT are difficult to identify. On the other side, men are visible “doing IT”, however, they are “doing gender” in ways that make them less useful as role models for women.

Although we have not interviewed men working in IT, it is clear that a similar gap is not challenging men’s belonging in IT. Men are more likely to encounter male role models in IT in their local context. Men (and women) are also more likely to recognize men in computing history and computing culture, while there are not many widely known women in computing history. “The act of categorization does not involve a positive test”, West and Zimmerman explain, but rather an
“if-can” test: “if people can be seen as members of relevant categories, then categorize them that way” (1987, p. 133). The low visibility of women in IT makes it less obvious that the simple “if-can” test will result in a woman being categorized as an IT expert.

The existence of female role models makes things easier for some women. But then again, finding a good match with role models varies greatly. Some women, like Monica, are more aware of differences between women: “I have not considered other women who were [working] here before me as role models, because they were not Norwegian, they were older than me, and married to male colleagues. I could not identify with them”. While Monica suggests that various individual features might “disqualify” people as role models, she also illustrates the importance of something recognizable in a role model.

18.8 CONCLUSION – DOES IT MATTER?

The low proportion of women in IT education and professions creates the low visibility of women and few female role models in IT. This has been identified as a challenge for recruiting women to STEM fields (Jacobs et al., 2017) and as one reason for the continuous strength of stereotypes associating IT with men (Varma, 2010). Our analysis of women in IT work in Norway suggests that this is the case also here, reflected in the women’s narratives about missing women in the field of IT. Our study identifies that on the one side, men only to a limited degree work as role models for women. On the other side, we found that the simple presence of women in certain positions and occupations is important for documenting that “women can do anything”. Hardly any of the women found female role models in IT. This relative invisibility of women in IT indicates that establishing female role models is not simply a question of increasing the number of women in IT, but also of challenging stereotypes that associate IT with men. An important tool for this work is to highlight diversity in IT (Cheryan et al., 2011).

Research gives incongruent answers to the effects of same-gender role models, thus we need to ask: does it matter for girls and women? Our informants are perhaps the resilient ones, those who can “get on with it”, even when their professional achievements are being erased by sexist comments. They have chosen a career path in IT, not because they felt invited as women, but despite the invisibility of women. Their narratives about role models indicate that gender has importance in the male dominated field of IT, where women face the “in/visibility paradox” and thus could work as role models for “doing gender”, but less obviously for “doing IT.” The “doing IT while doing femininity” is not a readily available
option if you want to be “taken seriously” (Kitzinger et al., 2008), but rather appears as “a contradiction in terms” (Nentwich & Kelan, 2014). Our conclusion is therefore that the research casting doubt about whether women need female role models in a male dominated field, like IT, might have drawn the correct conclusion in a local and immediate setting. However, it might also have stopped short of capturing the larger picture: female role models in IT might not be effective because women do not necessarily pass the “if-can” test in IT. Today, only 2% of girls against 20% of boys imagine themselves in a future career in IT (OECD, 2016). Turning our conclusion around, we could claim that if we want IT to become an equally potent option for girls as it is for boys, the existence of readily available female role models in IT is necessary. Perhaps we should consider a positive answer to the “if-can” test in the version “if women can be seen as belonging to the category of IT experts” as our goal for gender equality in the field of IT. Equally important, we should not forget that the low visibility of women in IT is not only affecting women, but the entire society, creating widespread perceptions of who fits the category of an IT expert, consequently who will pass the “if-can” test. We suggest that supporting the development of female role models in IT matters, not only for women, but also for convincing the girls’ and women’s supporters: parents, teachers, employers, colleagues and others who are the ones who should cheer girls and women on, into computing, engineering and other IT fields. Female role models are, in one of our informants’ words, “not necessary, but it makes things easier”.

REFERENCES


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