

The Dev Girls: gender constructions and competing identities through self-representation on Instagram

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Abstract Advances in software development are increasingly shaping the world around us with new software technologies giving global technology corporations the power to predict our behaviour and influence our decisions. The world of software development remains a male-dominated space and despite efforts to address the gender imbalance in this field, women's participation has been on the decline.

This paper examines the potential of social media as a space where gender/technology norms and relations can potentially be challenged, by analysing the Instagram self-representations of a cohort of women studying and working in the software field, the Instagram community Dev_Girls. The research is guided by three central research objectives. The first two objectives are to examine how the users of the Dev_Girls site construct gender through their self-representations and how they negotiate between potentially competing subjectivities as both women and 'women in technology', and how they negotiate between their feminine identity and their (traditionally masculine) identity as software coders. The third and final research objective examines how these self-representations interact with norms and relations within gender and technology.

This paper finds that the Dev_Girls site has given its users a level of empowerment in the form of new visibility as young women in the male-dominated technology industry, but this empowerment is limited by the constraints of social media, which prizes representations of heteronormative femininity over other forms of visual representations (Duffy, 2017, pp. 103; Carah and Dobson, 2016). This paper finds that the Dev_Girls community represents an expression of the values of neoliberalism and post-feminism which young women in contemporary society are expected to embody, values which restrict any real potential to offer a more diverse, challenging, or transformative narrative of what it means to be a woman in today's software industry.

Keywords: Gender equality, STEM, Technology, Social Media, Postfeminism

Introduction

‘Most women in the Bay Area are soft and weak, cosseted and naive, despite their claims of worldliness, and generally full of shit’

(former Facebook product manager Antonio García Martínez, *Chaos Monkeys: Obscene Fortune and Random Failure in Silicon Valley*)

‘What would you do if you weren’t afraid?’

(Facebook COO Sheryl Sandberg, *Lean In*)

Technology has changed the world in which we live so dramatically that it is almost unrecognisable from the world in which our parents and grandparents lived. Developments in modern technology have led to unprecedented changes in how we live; from how we receive and consume information, to how we shop, and how we engage with each other. These dramatic shifts have been driven by technology giants such as Google and Amazon and by ‘visionaries’ such as Apple founder Steve Jobs or Facebook’s Mark Zuckerberg, whose motto ‘move fast and break things’ came to define an era where ‘innovation’ and ‘disruption’ took precedence over any potential social and political costs (Ganesh, 2018).

While technology continues to race forward at breakneck speed, the participation of women in the development of technology continues to fall behind, particularly in the field of software development. Today, the data and information systems which run the world are controlled by software, from global financial systems to the applications we use at home on our smartphones, and so it is difficult to overstate the role in which software plays in shaping our lives. Increasingly our decisions are shaped by software algorithms, such as those embedded in social media applications like Facebook and Instagram, which determine the information we get to see based on our traits and our behaviour (Warner, 2018). In this context, the underrepresentation of women in the field of software development is not only an economic issue, in that it has been linked to the perpetuation of the gender pay gap (Berakova, 2017; Stansell, 2019; Belgorodskiy et al., 2012; Segovia-Perez et al., 2019; European Commission, 2019) but it also leads to important questions around the social, cultural, and political implications of a world running on software which has been developed primarily by only one half of the population.

The aim of this research is to understand if social media sites such as Instagram can provide a space where gender norms and stereotypes of women and technology can be challenged or disrupted, or if social media is a platform where gender norms and stereotypes of women and technology are reproduced and reified.

Literature review

The following paragraphs will outline the key debates in the literature which are salient to the research objectives which this article endeavours to address.

Gender and technology

Technology's gender problem

A professional sector where the gender gap has stubbornly persisted is the field of Science, Technology, Engineering and Mathematics (STEM). Globally, only 30 percent of females enrolled in higher education choose a STEM-related field of study, and there are significant gender differences between disciplines, with more women choosing health and welfare studies and natural sciences, compared to disciplines such as information and communication technology (ICT) and engineering, which remain heavily male-dominated (United Nations Educational, Scientific and Cultural Organization (UNESCO), 2017). The gender gap is even more pronounced within the ICT sector, which includes software development. It is concerning that while women are increasingly choosing other STEM related careers, female participation in the ICT industry is on the decline (Mueller, Khuong Truong and Smoke, 2018).

Why it matters: the implications of a male-dominated software industry

The impact of women's underrepresentation in ICT fields in terms of perpetuating economic inequalities and the gender pay gap has been well documented (Berakova, 2017; Stansell, 2019; Belgorodskiy et al., 2012; Segovia-Perez et al., 2019; European Commission, 2019). However, questions around the social, cultural, and political implications of a world running on technology that has been developed primarily by men are less well-researched. Banet-Weiser (2018, pp. 130) highlights that technology companies are increasingly becoming the centre of financial, political, and cultural power, emphasising the importance of feminist attention to the subject. Furthermore, software increasingly shapes and influences our daily decisions, and it has been found that inherent biases in the form of sexism, racism, and other forms of discrimination, can be embedded in the algorithms which determine how we are categorised, the type of information we receive and the type of advertising we are targeted with (Bolukbasi et al., 2016, Wagner et al., 2015).

The 'inherent' masculinity of technology

In contemporary terms, technology has come to be defined primarily within the sphere of industry and the military, or as 'the tools of work and war' (Wajcman, 2009) and is viewed as an inherently masculine domain. Mainstream narratives on the history of technological developments render the contributions of women largely invisible. In this world, man is the creator, the visionary and the innovator, and women's relationship to technology ranges from incompetent user, passive beneficiary, to helpless victim of a relentless masculine drive to dominate the world through technological advancement (Wajcman, 2001; Wajcman, 2009).

Theoretical debates on gender and technology

Since the 1970s, feminist scholarship on technology has evolved into divergent schools of thought, with the very nature of gender, technology and how they interact with each other becoming primary sites of contestation (Faulkner, 2001; Wajcman, 2001; Wajcman, 2009). Borrowing from the categorizations put forward by Faulkner (2001), contemporary scholarship on technology can be grouped into three broad areas: women in technology, women, and technology, and 'gender and technology'

Women in technology

The first category of scholarship is primarily concerned with women's low participation in the production of technology and seeks to overcome the issue through a combination of socialization, equal opportunity and anti-discrimination policies and is predominately situated within a liberal feminist tradition (Wajcman, 2009). This approach is built upon a vision of technological determinism, where technology is a positive, fixed, and inevitable force, independent of social, cultural, and political influences such as gender (Yansen and Zukerfeld, 2014; Adam, Howcroft and Richardson, 2004). Here technology is not the issue, but it is women who are 'missing out' on opportunities available to them as a result of their motivations, perceptions, and choices.

Women and technology

The second approach is primarily concerned with the impact of technology on women, as receivers, consumers, and users (Yansen and Zukerfeld, 2014). Here we find highly dichotomous views ranging from the dystopian to the utopian, with technology viewed either as a tool of masculine domination imposed on women as a mechanism for their subjugation, or as a tool of emancipation to be harnessed by women, opening up opportunities for gender to be transcended in the cyber world (Wajcman, 2001; Haraway, 2000, pp. 51).

Gender and technology

More recent research has moved away from positions of essentialism and technological determinism by recognising that there are no fixed gender binaries in relation to the production of or engagement with technology and takes a poststructuralist view that technology is socially constructed, or co-produced, alongside gender (Faulkner, 2001; Wajcman, 2001; Wajcman, 2009). Gender is an integral part of the social shaping of technology, and technology plays a key role in the shaping of society, meaning one cannot understand gender without reference to technology and vice versa (Faulkner, 2001).

Postfeminism, neoliberalism and technology

A postfeminist sensibility

Over the past two decades, the term 'postfeminism' has emerged as an important feature of contemporary feminist analysis, while remaining a strongly contested term within this space (Gill, 2007; Gill, Kelan and Scharff, 2017; Riley et al., 2017). Debates around postfeminism centre primarily on where it is situated ideologically and how the 'post' in postfeminism should be understood (Gill, Kelan and Scharff, 2017) and can be understood as an epistemological break, a historical shift, or a backlash against feminism itself (Gill and Scharff, 2011, pp. 3).

Gill (2007) argues that each of these contesting understandings of postfeminism are problematic, as they fail to identify the specific features of postfeminism, thereby making it difficult to apply postfeminist theory to any particular cultural or media analysis with any rigour. In particular, they fail to account for the developing complexity of media content (Riley et al., 2017). These issues have led to a fourth understanding of postfeminism, put forward by Gill (2007), who argues that postfeminism is best understood not as a theoretical perspective, nor as a historical shift, nor as a straightforward backlash, but rather as a sensibility. According to Gill (2007) these characteristics include the idea that femininity is a bodily property; the shift from objectification to subjectification; the emphasis on self-surveillance, monitoring, and discipline; a focus on

individualism, choice, and empowerment; the dominance of a makeover paradigm; a resurgence in ideas of natural sexual difference; a marked sexualization of culture; and an emphasis upon consumerism and the commodification of difference.

The 'entanglement' of postfeminism

A key characteristic of a postfeminist sensibility is the ethos that 'all battles have been won' and the idea of the 'pastness' of feminism, framing differences in the experiences of men and women as a matter of individual 'choice' rather than as the result of continuing structural inequalities of gender (Gill, 2014). However, rather than disavowing feminism entirely, a postfeminist sensibility represents the 'entanglement' of both feminist and antifeminist themes (Gill, 2007). McRobbie (2004) describes the 'double entanglement' of postfeminism, where gender inequalities are reified, paradoxically, by drawing on selectively defined feminist values such as empowerment and female liberation.

Central to a postfeminist sensibility is the making and remaking of subjectivity (Riley et al. (2017), Gill and Scharff, (2011, pp. 8), Gill (2008). Gill (2008) argues that it is not only required for contemporary women to look attractive but a 'compulsory (sexual) agency' has become a prerequisite for subjecthood itself. The body is presented both as a source of women's empowerment and as a site of constant self-monitoring, self-surveillance, and self-improvement, in order to conform to narrow, normative representations of female attractiveness. There has also been a shift in contemporary society from women being viewed as passive objects of the male gaze to being active agents in the presentation of their own sexuality, choosing to represent themselves in a seemingly objectified manner, as a means of expressing their sexual liberation (Gill, 2008). In this context, sexual objectification is no longer done to women by men, but rather becomes an expression of women's free will and a celebration of themselves as active subjects, signifying a new disciplinary regime where the external male gaze becomes internalised (Gill, 2008).

Neoliberalism and a postfeminist sensibility

These new types of subjectivities reflect not only a postfeminist sensibility but also the prevalence of neoliberal values, where feminist ideals of liberation are intertwined with values which celebrate individualism, consumerism, and the achievement of beauty through work on the body (Riley et al., 2017). Young women are often seen as the key beneficiaries of the neoliberal world order, as argued by Harris who writes that 'new ideologies about individual responsibility and choices also dovetail with some broad feminist notions about opportunity for young women, making them the most likely candidates for performing a new kind of self-made subjectivity' (Harris, 2004, pp. 6). The pressure, therefore, is put on young woman to live up to an idealised notion of the 'CanDo girl', the living embodiment of neoliberal and postfeminist values of individualism, resilience, and self-belief, who can be identified by their commitment to career success, their belief in their own capacity to succeed, and their display of a consumer lifestyle (Harris, 2004, pp. 13).

Social media: A tool of empowerment?

Social media has democratised the creation and production of media content and as a result it offers a space where gender representations can potentially be shaped in different ways (Caldeira, De Ridder and Van Bauwel, 2018). Self-representation gives the social media user the power to

challenge and play with gender stereotypes and represent their gender identities in non-traditional ways. Rocamora (2011) writes that personal fashion blogs 'constitute an ambivalent space, a space that echoes the position of women in contemporary society'. The ambivalence inherent in social media means that women can control and create their own content which celebrates their sexuality and femininity, thereby giving them a sense of empowerment, but these images can also be transformed into objectifying and degrading material through male commenting, editing and redistribution (Davis, 2018).

Duffy (2017, pp. 103) argues that social media's claims towards the democratization of representation and diversity are viewed as 'dubious at best' by feminist scholars and highlights the 'narrowly defined aesthetic structures' of the top bloggers, who are 'young and overwhelmingly Caucasian or Asian'. Carah and Dobson (2016) further illustrate this point by highlighting that visual 'hotness' or 'heterosexiness' remains 'the most valuable form of social currency for young women' and point to traits of hegemonic femininity – 'slimness, large breasts, curvaceousness, white tanned skin' - which prevail in the postfeminist era and which are reflected in social media images. These arguments run counter to the prevalent narrative of social media as a site of 'realness', 'authenticity' and 'relatability' (Duffy, 2017, pp. 104). This narrative is further contested by the commodification of the personal images on social media, through self-branding, giving rise to the ironic condition of 'authenticity' being leveraged as a tool for self-branding (Khamis, Ang and Welling, 2017). The sense of empowerment, freedom and self-expression is contradicted by the prevalence of capitalist and neoliberal values of consumerism and consumption.

An 'economy of visibility'

Within the context of popular feminism, 'visibility' has shifted from a political act or a means to achieve an end, to becoming the end in itself, which Banet-Weiser describes as popular feminism's 'economy of visibility' (Banet-Weiser, 2018, pp. 21). It is the *visibility* of categories such as gender and race which matters, rather than the structural foundations on which they are built. For example, in an economy of visibility, the wearing of a t-shirt bearing the slogan 'this is what a feminist looks like' can transform the logic of what it *means* to be a feminist into what a feminist *looks* like (Banet-Weiser, 2018, pp. 25). Despite the claims of popular feminism to be about female 'empowerment', in an economy of visibility, empowerment is often achieved through a focus on the visible body, which has now become the 'commodifiable body' (Banet-Weiser, 2018, pp. 25).

The technology industry: The issue with 'leaning in'

Contemporary debates around solving the issue of women's underrepresentation in the software industry are increasingly being shaped by these neoliberal values and a postfeminist sensibility, which can be found within online media, women's magazines and best-selling books such as 'Lean In' by Facebook's Sheryl Sandberg, one of the software industry's most high-profile women (Harvey & Fisher, 2014; Rottenberg, 2013; Kim, Fitzsimons and Kay, 2018). Messages of 'empowerment' to women to take control of their careers by taking a seat at the table place the responsibility on individual women to overcome their internal barriers in order to solve workplace gender inequalities and endorse solutions which require women to change themselves, rather than requiring organizations or management to make any substantive changes to address these issues (Kim, Fitzsimons and Kay, 2018). These discourses have become part of what has been described

by Gill, Kelan and Scharff (2017) as a ‘postfeminist common sense’, which ‘simultaneously recognizes feminist insights yet repudiates the need for change, a common sense that exculpates organizations and locates responsibility with women’. Women working in the technology industry are expected to embody many of these same neoliberal and postfeminist values by taking individual responsibility for overcoming any barriers that may hold them back, while dominant structural inequalities within the technology industry remain largely unacknowledged (Richterich, 2020).

Increasingly women in the technology sector are using online communities to connect with other women (Schindler, 2019), and hashtags such as #womenintech have become popular on Instagram (Instagram, 2020c). This raises some important questions that have not yet been fully examined in the literature. How are women working in the technology industry using the technology of social media to represent themselves? Does social media offer them a space where they can challenge the inherent masculinity of technology, or are they constrained by prevailing forces of neoliberalism, postfeminism and the economy of visibility? The next section will endeavour to address these questions in the context of a particular online community for women working in the software industry, specifically Instagram’s Dev_Girls community.

Research Methods

The overarching aim of this paper is to explore Instagram as a space where prevailing norms and stereotypes of gender and technology can potentially be challenged, disrupted or (re)constructed. To this end, three core research objectives have been identified:

- To understand how gender is constructed by members of the Instagram community Dev_Girls through their visual and textual self-representations.
- To examine the ways in which these users are negotiating between potentially competing subjectivities as both women and ‘women in technology’.
- To explore the ways in which these self-representations interact with traditional norms and stereotypes of gender and technology.

Given the focus on themes such as femininity as a bodily property, a shift from objectification to subjectification and the sexualization of culture, the analysis framework will be heavily influenced by two seminal bodies of scholarship which are concerned with visual representations of femininity. The first is Laura Mulvey’s theory of the ‘male gaze’ (Mulvey, 1975) and the second is Goffman’s work on ‘gender display’ (Goffman, 1976). The analytical framework of this paper has incorporated a number of Goffman’s gender display visual codes, namely feminine touch, stance, expression, and licensed withdrawal (Goffman, 1976).

The research methods employed by this study are modelled on previous research by Smith and Sanderson (2015) and leverage a mixed methods approach, constituting a content analysis of visual representations and a separate thematic textual analysis. The content analysis was applied to the photographs posted on the Dev_Girls Instagram page while the thematic analysis focused on the captions attached to these posts. This research is based on analysis of the images and captions

which were posted on the Dev_Girls Instagram page during a two-month period, from 1st September to 31st October 2019.

Findings

The content analysis of the photographs, captions and comments from the research sample uncovered three broad themes: 'normative, Western femininity', 'the hard-working', 'Can-Do' girl', and 'femininity and technology'.

Normative, Western femininity

A striking feature of the visual analysis is the prevalence of representations of normative standards of female attractiveness within the Dev_Girls photographs, such as whiteness, slimness, and typically 'Anglophone' facial features (Shields-Dobson, 2015, pp. 70). The analysis clearly identified that the Dev_Girls users are primarily attractive, young, and overwhelmingly white. Of the 'selfie' photographs analysed, the majority included multiple visual codes which corresponded with Goffman's research on gender display, including the 'ritualization of subordination' (Goffman, 1976, pp. 40) and 'licensed withdrawal' (Goffman, 1976, pp. 65). The majority of the 'selfie' photos feature visual codes of submission including 'canting poses'¹ and 'feminine touch'² and in almost half of the 'selfie' photographs the subjects' gaze is averted. In the majority of the 'selfie' photographs (66 percent), the subject is pictured as being passive, in that they are not participating actively in the situation, recalling Mulvey's argument that women are often depicted as a passive object to be looked at (Mulvey, 1975, pp. 62). In many of the Dev_Girls images, the subjects appear to be unaware that they are being looked at by the viewer, implying their complete trust in and submission to the situation. A significant number of the 'selfie' photographs have been taken from behind, which gives the impression of a sense of voyeurism. Here there is a strong sense that the viewer is spying on the subject, placing them in a particularly vulnerable and submissive situation. The subject is seemingly unaware of the viewer's eyes on them and is comfortable, sensing no threat. Despite the Dev_Girls having ownership and agency in their self-presentation, these visual codes of passivity and submission are present, suggesting an internalisation of the external male gaze where the Dev-Girls chose to present themselves in a seemingly objectified manner, as a means of expressing their free will (Gill, 2008).

The hard-working, 'Can-Do Girl'

The second theme which emerges from the textual analysis is the theme of hard work as a means of realising one's goals and achieving success. An analysis of the captions reveals that the users of the Dev_Girls page regularly work long hours, often into the evenings and weekends, and spend their free time focusing on self-management and self-improvement. The analysis does not reveal this labour to be a negative factor in the subjects' lives, but rather a means to better productivity

¹ A body or head 'canting' pose is a further indicator of subordination and submission, where the subject is photographed in a pose with the level of their head lowered relative to that of others, including the viewer of the photograph (Goffman, 1976, pp. 46).

² Goffman describes women more often than men, pictured using their fingers and hands to touch objects or to touch themselves, which he describes as 'feminine touch' (Goffman, 1976, pp. 29)

and achieving desired results. Hard work and long hours are a necessity in order to get the work done and the resultant sacrifice of leisure time is deemed acceptable. Continuous self-improvement is another key factor, particularly professional self-improvement through learning and the captions further reveal a focus on self-motivation and general self-improvement. A love of their work as coders or programmers is also evident from the analysis.

The textual analysis reveals that the users of the Dev_Girls site display many characteristics of the typical 'Can-Do Girl', the living embodiment of neoliberal values such as entrepreneurialism, individual responsibility, and self-belief (Harris, 2003, cited by Banet-Weiser, 2018, pp. 28). The research subjects reveal themselves to be highly motivated and ambitious and they represent themselves as responsible for their own success.

Femininity and Technology

A significant feature of the Dev Girl photographs is the ubiquity of the laptop, workstation, or computer screen, which features in almost every image. The vast majority (98 percent) of the 'self' photographs feature at least one of these devices. In one way this is not a surprising feature as the Dev_Girls community is made up of women who work or study in the technology sector. Nonetheless, a reading of how these artefacts are positioned within the context of the self-representations of users of the Dev_Girls site leads to some notable findings in the context of gender and technology.

In the majority (60 percent) of the 'selfie' images, the subject is pictured passively with their laptop or workstation, meaning they are not interacting with or working on these devices. However, a closer inspection of many of these photographs reveals that these images do not simply represent an attractive, feminine subject but also feature lines of computer code on a screen, presumably written by the subject of the photograph. As with many science and engineering disciplines, software coding is often viewed as a masculine pursuit (Faulkner, 2000). Therefore, negotiations between femininity and masculinity become evident when analysing a group of photos where the subject is pictured with their laptop turned towards the camera and their computer code is visible on the screen. The visual codes of normative femininity are still clearly evident, but the laptop shows lines of computer code, a more masculine element which contrasts with these images of femininity.

Another collection of photographs further illustrates these negotiations between femininity and masculinity: those which feature the subject working at their laptop or computer. Again, these images represent a level of normative femininity, however they represent a much less gendered image of the subjects. These images represent a visual subjectivity that is not usually visible in mainstream media representations of gender and technology, that of young women actively engaged in their work in the technology space.

A number of the photographs which appear on Dev_Girls site feature comments from what appear to be male Instagram users³. These comments are often disparaging, negative or mocking in nature and provide some insight into the challenges which are faced by women in the technology space. These comments illustrate the conflicting and paradoxical subjectivities which the research subjects have to navigate within the Dev_Girls community. On one hand, there is an expectation for them to embody traits of sexual desirability, to satisfy the male commenters' sexual fantasy of the 'cute cybergirl'. However, the subjects are also derided, dismissed, and patronised when they represent themselves as 'too' sexy or 'too' feminine as this leads to disbelief in their ability to be 'real' software coders.

Discussion

Gender constructions in the Dev-Girls community

The visible body is the primary means of self-representation by the users of the Dev_Girls site and the primary means through which they construct their gender identity. The overwhelming majority of the images represent women who are white, attractive, and young. While overtly sexualised imagery was not found, the images nonetheless represent a strongly gendered visual subjectivity. Through their styling, the photos represent a type of beauty that is presented as 'real' and 'relatable', but which in reality is performative and represents a homogenous and limited image of beauty, with diversity and difference remaining unacknowledged. Central to the gendered visual representations of the Dev Girls is their 'to-be-looked-at-ness' (Mulvey, 1975, pp. 62), with the body styled, packaged, and presented as a commodity to be looked at and admired. This is a notable finding as the Dev_Girls community is ostensibly a community for women, rather than for men, suggesting an internalization of the 'male gaze', where objectification is no longer done by men to women, but rather is considered an expression of free will and agency by women themselves (Gill and Scharff, 2011, pp. 8).

While the findings reveal that the majority of the 'selfie' images reproduce traditional gender stereotypes, this does not tell the entire story, as within the research samples another subjectivity can be found - that of the female technology professional. These photos represent an image that is in contrast with traditional gender norms and stereotypes, that of a young woman employed in the field of technology, pictured actively focused on her work. It is important to highlight that these images are not the majority, nor are they gender-free, as they remain bound within the narrow confines of normative Western beauty. Nonetheless, there is agency and an alternative subjectivity evident which can be viewed as a disruption to the traditional gender stereotype of the attractive, passive female.

Another means of gender construction within the Dev_Girls community is the prevalence of the hard working 'Can-Do Girl' (Harris, 2003, cited by Banet-Weiser, 2018, pp. 28). Of particular note is the absence of gender inequality in the software industry as a topic for discussion on the

³ It should be noted that there is no definitive way to ascertain the gender of the commenters, however for each negative comment the Instagram profile was checked and based on this check the commenters appeared to be male.

Dev_Girls community, a community of women engaged in this industry. As 'Can-Do Girls', it can be argued that the users of the Dev_Girls site view overcoming any barriers they encounter as their individual responsibility, to be addressed by working harder to fit in, rather than as a result of structural inequalities in the technology sphere (Kim, Fitzsimons and Kay, 2018).

Negotiations between 'femininity' and (masculine) 'technology'

Within the Dev_Girls community, a high value is placed on 'femininity', as evidenced by the prevalence of visual self-representations of normative attractiveness and the popularity of these images within the community. However, there are negotiations at work between this femininity and an alternative subjectivity, that of the (traditionally masculine) software coder. These negotiations take on several forms, the first is situated within an essentialist perspective, where the users of the Dev_Girls site retain their inherent femininity through visual representations of normative attractiveness, which are then coupled with images of technology, such as a laptop or computer. Negotiations between femininity and (masculine) technology are particularly evident in the images where the laptop or computer screen is turned towards the camera and the lines of computer code are visible. The laptop and code are not simply employed as accessories in these images, as there is clearly a desire to show the computer code, representing the users work to the viewer. While these images often portray visual representations of normative femininity, this is offset by the presence of the computer code, the product of software engineering, a traditionally male-dominated pursuit (Faulkner, 2000). Within these images a new, ambivalent subjectivity is formed, echoing the theory of social media as an 'ambivalent space' (Rocamora, 2011) where the demands of the male gaze are satisfied but a space is carved out where attention can also be drawn to one's technical work. Images of the users at work on their laptops further highlight this new, ambivalent subjectivity, making visible a representation that is not usually visible in mainstream media, that of young women at work in the technology space, while still highlighting the limits placed upon women who must represent themselves in a narrow and limited way so that this visibility can be achieved.

The challenges faced by users of the Dev_Girls site in negotiating between 'feminine' and 'technical' subjectivities can be seen in the disparaging comments written by male commenters. These comments illustrate the sometimes hostile and misogynistic response faced by women who enter the technology space, a kind of 'toxic geek masculinity' (Banet-Weiser, 2018, pp. 132). Within these comments lies a contradictory message: it is 'sexy' for women to be interested in technology, but they cannot expect to be taken seriously as 'real coders' if they present themselves as 'too sexy'. Here again the ambivalence of social media is brought to the fore, the users of the Dev_Girls site are 'empowered' by the ability to self-represent on social media and use this 'freedom' to craft a new subjectivity, that of a young woman working in the technology industry. These women are rewarded with visibility and popularity for their visual expressions of normative femininity. Simultaneously and paradoxically, these women then find themselves at the mercy of a culture of surveillance, where they are subject to male commentary which is mocking and demeaning (Davis, 2018)⁴.

⁴ It should be noted that the negative commentary represents a small number of the overall comments on the Dev_Girls site.

The Dev_Girls community and gender/technology norms and stereotypes

“You cannot be what you cannot see” is one of the key messages of the ‘Girls who Code’ initiative, an organization which focuses on closing the gender gap in computing (Girls Who Code, no date, b). This statement reflects the notion that more women could be encouraged to enter the field of software development if they could see role models already working in the field that they could relate to. The Dev_Girls community represents a new kind of role model for young women, previously not visible in mainstream media, that of a young woman enjoying her work in a highly skilled, high tech industry. Through their visual representations the users of the site are providing an alternative subjectivity to the traditionally masculine computer coder, that of the young female computer coder. Though essentialist in nature, the underlying message of the Dev_Girls community, that you can be both a developer and a girl, is a message which represents a disruption to the norm. However, the potential for the Dev_Girls community to challenge gender norms in technology by presenting an alternative subjectivity is dramatically lessened by the prevalence of visual representations of heteronormative femininity. Rather than challenge and disrupt, these self-representations serve to reify and reproduce traditional gender stereotypes of women as objects to be looked at.

In summary, the interactions between the self-representations of the Dev_Girls community and gender norms and stereotypes can be described as contradictory, paradoxical, and ambivalent in nature. Women in this community are empowered on one hand to claim visibility for themselves but disempowered by the forces of neoliberalism and postfeminism which allow for only a selective type of feminism and resistance to be expressed. The users of the Dev_Girls community are unique in that they are women working in a male-dominated profession, but success or failure in this field hinges only on their individual motivation and determination, while structural inequalities in the field remain unacknowledged. In many ways the self-representations on the Dev_Girls community attempts to challenge or disrupt gender norms, but these attempts can be characterised as toothless in nature, as there is little evidence of any real attempt to break out of social media’s narrow and restrictive sensibilities and present a compelling and genuinely empowering new narrative for women in technology.

Conclusion

Women in the software industry face many challenges, including sexism and a male-dominated culture, but the responsibility for dealing with these issues often falls on the shoulders of the women themselves, rather than being recognised as structural issues which need to be addressed at a macro level by organizations or policymakers. These barriers can be seen within the Dev_Girls community, where male resistance and a form of toxic geek masculinity is expressed through disparaging and sexualizing commentary. It is possible that these barriers are holding the women of the Dev_Girls community back from self-representing in any way that could be considered truly transformative. It could be argued that these young women have gained entry to this male dominated world but have embodied the notion that their presence has to be balanced by self-representations which are unchallenging, unthreatening, and appealing to the male gaze.

Despite the opportunities offered by communities such as the Dev_Girls site to empower its users to craft an alternative narrative around what a software programmer looks like, this paper questions the truly transformative capacity of the Dev_Girls site. While the users of the site have expanded the representation of a software programmer beyond the traditional ‘male geek’ stereotype, this new representation remains almost as narrow and homogenous, thus limiting the potential of the site to act as a disrupting or challenging force. A sense of empowerment can be seen in the form of new visibility, shared community, and a sense of achievement as women in the technology industry, but this empowerment is limited by the constraints of social media, which prizes representations of heteronormative femininity over other forms of visual representation by women. This research finds that the Dev_Girls community represents a perfect expression of the values of neoliberalism and postfeminism which young women in contemporary society are expected to embody, values which restrict any real potential to offer a more diverse, challenging, or transformative narrative of what it means to be a woman in today’s software industry.

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