

Research Article

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Post-work Futures and Full Automation: Towards a Feminist Design Methodology

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Abstract: Among business leaders, government officials and academics there is a general consensus that new technological developments such as artificial intelligence, robotics and the internet of things have the potential to "take our jobs." Rather than resisting and bemoaning this radical shift, theorists such as Nick Srnicek and Alex Williams have argued that full automation, universal basic income, and future thinking, should be demanded in order to challenge neo-liberal hegemony. Helen Hester has gone on to consider the limits and potentials of this manifesto in regard to the automation of reproductive labour. In this article, I take this work as a starting point and consider the significant burden that is left at the designer's door in the post-work/post-capitalist imaginary. I explore the changes that would need to be made to design methods: techniques that are themselves part of the history of industrial capitalism. Focusing on the automation of domestic labour and drawing on feminist theory and emergent design practice, I begin to develop a feminist design methodology; without which I argue that an emancipatory post-work politics cannot be realised.

Keywords: automation, design, post-capitalism, feminism

Popular culture is rife with visions of automated futures. Television series and films imagine worlds where robots gain consciousness; documentaries and news coverage show machines competing with humans in all aspects of life including jobs, sex and relationships; and business literature predicts how many workers will be displaced by the "fourth industrial revolution." Social and cultural theory is no exception, with debates about post-work futures and automated labour gaining significant traction in the last few years. One of the most prominent explorations of the politics of post-work futures is the book *Inventing the Future* by Nick Srnicek and Alex Williams. Widely debated and highly controversial, Srnicek and Williams argue that in order to challenge neoliberal hegemony the left should strive for future thinking, universal basic income, and the full automation of labour.

This growth in discourse about automated futures is partly due to the increasing sense in which automated labour is becoming a reality. New technological developments such as artificial intelligence, robotics, machine learning and the internet of things have the potential to take human jobs. In some sectors, such as the service industry, changes are already apparent. Self-service checkouts are a feature of most supermarkets, and many airlines have automated check-ins and bag drops. If wider changes come to pass, it is predicted there will be a global "crisis of work" that would see a dramatic decline in paid employment (Frey and Osbourne). Low paid jobs would be heavily affected by this transformation, thus exacerbating inequalities of class, race, and gender on a global scale.

While there is no doubt that technologies such as artificial intelligence are gradually reconfiguring work, mass media narratives and business literature have a tendency towards technological determinism, overstating the revolutionary nature of new technology and "black-boxing" the complexities of technological development (Forlano and Halpern). The proponents of post-work futures have also been

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accused of technological determinism (Cruddas). Although this accusation may be accurate in some cases (Mason, for example), it would be a fallacy to regard Srnicek and Williams' arguments as simplifying or overstating the power of technology. At the same time, as I will argue, a deeper understanding of design, than the one that Srnicek and Williams offer, is necessary to make an emancipatory post-work future a possibility. Thus, I begin this article by outlining the arguments made about full automation in *Inventing the* Future. I find that while invention and the repurposing of technology take centre stage in the book, Srnicek and Williams do not acknowledge or consider the limitations of existing design practice: it is as if the same methods could be reoriented towards different ideological ends. I argue that this is not necessarily the case and that through the lens of the gendering of technology the limitations of existing design logics become acutely apparent. Therefore, I explore the critique of *Inventing the Future* in regards to reproductive labour and go on to consider the limits and possibilities of design methodologies in relation to the gender politics of post-work. Focusing on user-centred design and the automation of domestic labour, I argue that without a feminist design methodology any push towards full automation would reproduce existing inequalities.

Hopes and Fears of Automation in *Inventing the Future*

The demands for full automation, universal basic income, and future thinking that Srnicek and Williams make in *Inventing the Future* emerge from a critique of "folk politics" exemplified by activist movements such as Occupy. Folk politics, they argue, values "the local as a site of authenticity," privileges "projects unscalable beyond community" and prefers actions taken by participants rather than representatives (11). Srnicek and Williams argue that while folk politics may be appropriate for some types of activism, it is not strategically sufficient to challenge neo-liberalism, or indeed, to enable a move away from global capitalism.

Instead, Srnicek and Williams argue that the left need to look to the successes of capitalism. They suggest that capitalism "is an expansionary universal that weaves itself through multiple cultural fabrics, reworking them as it goes along" and that "anything less than a competing universal will end up being smothered by an all-embracing series of capitalist relations" (75). The authors recognise the critiques levelled at universalism, particularly modern progress narratives and colonisation. However, they argue that universalism can include difference and that we should think of the universal as "an empty placeholder that hegemonic particulars (specific demands, ideals, and collectives) come to occupy" (78). Srnicek and Williams set about trying to build a post-work platform whereby, with adequate time and resources, multiple ways of living could flourish, and the conditions for a universalism from below could emerge. To make this possible, they argue that a reduced working week, universal basic income, the end of the work ethic, and a fully automated economy are required. The latter, Srnicek and Williams suggest, is essential in order to "liberate humanity from the drudgery of work" (109). They argue that the development of technologies that replace human labour should be accelerated in order to create a world devoid of tedious jobs and full of meaningful activity. This idea has broad appeal and, according to Srnicek and Williams, should become targeted as a politic project of the left.

Nevertheless, Srnicek and Williams recognise that technology and technological infrastructures are embedded within capitalist relations and allow and constrain certain ideas or behaviours. For example, they write of how the domestic environment has been the focus of little technological innovation because "lack of productivity norms ... have given capitalism few incentives to invest in the reproduction of household labour" (113). The material world is a product of ideology, and once technologies, infrastructures and practices are established, they can be difficult to change. Thus, a populist movement against capitalism without a different approach to the production and distribution of technologies would be "forced back into capitalistic practices" (136).

Srnicek and Williams identify two strategies in order to challenge the technological hegemony of capitalism. The first is the invention and adoption of new technologies that can enable change. In this respect, they emphasise the importance of large-scale inventive projects such as space travel and the internet, as well as more speculative technologies imagined for a post-capitalist future (147). They make a case for greater democratic control of technological development. The challenge, Srnicek and Williams

suggest, is to develop mechanisms for "popular control over the direction of technological creation" (147). As I explore below, there is a large body of user-centred and participatory design knowledge that could be drawn upon in this endeavour. Closer examination of this work would highlight the obstacles involved in a democratisation of design.

The second strategy that Srnicek and Williams outline is the repurposing of existing technologies and infrastructures. Although unequal power relations are objectified in the built environment, they argue that there is often a "significant untapped reservoir of potentials lying dormant within a technology" (152). The challenge, then, is to analyse which technologies could be repurposed and used to further a leftist post-capitalist project. Srnicek and Williams suggest that the left should outline these broad parameters in order to inform "workers involved in the technology sector who are, through their design choices, building the terrain of future politics" (153). This is an interesting suggestion and would necessitate a left that not only understands technology, as Srnicek and Williams note, but also one that values design, i.e. does not simply see it as a frivolous "add-on."

The demands and related arguments of Srnicek and Williams have been subject to criticism, particularly in regard to "folk politics," the environmental consequences of full automation, and the extent to which all labour (including reproductive labour) can be mechanised. In their updated version of the book, Srnicek and Williams have acknowledged these criticisms, and in response, they imagine three interrelated future scenarios which they differentiate from their own leftist post-work future. The first of these futures is a neo-colonial and racist post-work future in which post-work societies are established in advanced capitalist countries, but cheap labour is exploited elsewhere. The second future is an environmentally unsustainable vision of post-work in which production processes remain unchanged, and damage to the environment intensifies. The third future is a misogynist future where there is a decrease in waged labour and an increase in leisure time, but there is no shift in unpaid reproductive labour. Women continue to bear the burden of domestic labour and care work, and there is limited technological innovation in these areas. Srnicek and Williams argue that a leftist post-work future is a possible alternative to these depressing scenarios and that the left should prepare for the crisis of work.

The third future scenario was written partly as a response to Helen Hester's theorisations regarding reproductive labour and the post-work/post-capitalist imaginary. Hester observes that discussions about post-work tend to valorise and celebrate reproductive labour ("After Work"). She suggests that forms of work that are mainly (and problematically) associated with cis-men are treated as labour that must be resisted, refused and transformed through automation. While labour (problematically) gendered as feminine, such as domestic labour and care work, proliferates as the place for self-actualisation. She argues that "in suggesting that women's work is a sphere for self-realisation, satisfaction and various social goods, such analyses not only downplay feminist arguments about the myriad frustrations and exhaustions of this type of work, but in fact enshrine gendered forms of labour as the basis for post-work society" ("After Work" 27.48).

Instead, Hester offers an alternative. She suggests that we should queer the binary gender system that shapes the division of labour. While elements of reproductive labour that are socially necessary and personally fulfilling should be maintained, other less desirable forms of work should be open for rationalisation, automation or alleviated altogether. Hester offers three loose suggestions to open up a discussion about the future of social reproduction ("After Work" 30.58). The first of these is "rethinking living arrangements": this would include exploring solutions such as collective housing, as well as making changes to domestic space such as communal kitchens, laundries, and workshops. Collective involvement would enable larger financial investment in large-scale technologies. The second is the "lowering of living standards." As Ruth Schwartz Cowen observed, the rise of labour saving domestic technologies led to an increase in standards of cleanliness and "more work for mother." Hester suggests, then, that perhaps we should be thinking of lowering standards of cleanliness, ideas of hospitality and the complexity of meals. The third suggestion is "rethinking domestic technologies." She argues that we should remain open to the automation of care work, for example.

To take these fascinating suggestions forward would require sensitivity to cultural and social norms as well as carefully crafted design strategies to intervene into the socio-technical landscape. Therefore, as is

the case with Srnicek and Williams' suggestions to democratise technological creation and outline broad parameters for repurposing technology, an understanding of the complexities of design practice would be essential. Through this understanding, it would become clear that without changes to dominant design methodologies the depressing scenarios outlined by Srnicek and Williams would be hard to avoid. Thus, in the remainder of this article, I set myself the task of outlining how dominant design methods reproduce sociotechnical hegemony, while, at the same time, identifying how design could advance the post-work project.

The Limits and Potentials of User-Centred Design

Although "design is basic to all human activity," the history of design as a distinct discipline is intimately tied to the development of consumer culture (Papanek 3). From the nineteenth century onwards, designers worked to identify their practice as "adding value" to a range of goods and services, thus solidifying design as a profession, and linking the economic to the cultural in the process (Julier 40). By implication, the majority of design methodologies have been developed in order to provide for the workings of the market. As an industrial practice, design has been responsible for environmental degradation caused by the production of an excess of consumer goods. As a discipline, design has often been complicit in the spread of Eurocentric and patriarchal ideals, producing objects according to a designer's "superior taste."

Since the 1980s, however, design has increasingly been dominated by a user-centred paradigm that includes human-centred design, design thinking, participatory design, co-design and design ethnography (Forlano). While these methods might have different histories, politics and processes, they are all led by attempts to understand the needs and desires of the user. As Andrew Blauvelt suggests, this turn to the relational has seen design move from a focus on form and meaning, to processes, effects, and context. Emphasis has shifted from producing goods for decontextualised mass markets, to creating experiences based upon understanding users and environments. One of the most established user-centred methods is "design thinking." Tim Brown, president, and CEO at *Ideo* defines design thinking as "a human-centred approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements of business success" (par. 2). Design thinking begins by empathising with users, identifying problems, and solving pain points in user journeys. Designers then go on to brainstorm ideas, create prototypes and test possible solutions. Users are usually involved at each stage. Advocates of design thinking frequently emphasise the importance of empathy: that understanding users and considering their psychological, emotional and cultural needs is of paramount importance.

Although the act of empathising may well be an improvement upon designers imposing their tastes upon people, design thinking uses empathy as a means to a market. New insights or pain points drive new solutions, and ultimately, greater profits. Empathy is short-lived and no longer needed once the solution has been found. Empathetic emphasis serves as a way of disassociating designers from the negative consequences of capitalism. In reality, the empathy stage in the design thinking process is often not much more than a detailed exploration of the target market. Indeed, as Daniela K. Rosner argues, design thinking methods reproduce many of the individualist, solutionist, objectivist and universalist tendencies of twentiethcentury design practice (23-41). Even when user-centred methods involve a more ongoing engagement with local contexts, capitalism often works to reproduce existing structural inequalities. As Laura Forlano argues, professional design practice is "commonly beholden to neoliberal, capitalist economic models that define the individual subject, primarily as a consumer with the power to make choices," and the market "- understood as relationships between funders, clients, start-ups, designers, retailers, and users - ignores, dismisses, and fails to account for the needs of certain individuals and groups in favor of others" (17, 28).

Nevertheless, while the development of design is part of the history of capitalism, it is not exhaustive of it. As Cameron Tonkinwise suggests, even "within design thinking there is an idealistic drive towards anti-capitalism, or at least anti-business as usual" (14). This drive is even stronger in methods such as participatory design whose radical practice had "a profound influence on the current recognition and acceptance of the value of user participation" (Simonsen and Robertson 5). Participatory design emerged in the workplace democracy movement in Scandinavia in the 1970s and was a response to the introduction of computers in the workplace. As Simonsen and Robertson note, the aim of early participatory design was to "provide people with better tools for doing their jobs, eventually enabling them to extend their skills while automating the tedious and repetitive parts of work" (2). Participatory design recognises the tacit knowledge of all stakeholders and aims to actively involve them in the process of creation. Workshops involve "collective reflection-in-action," where typically "designers strive to learn the reality of users' situations" and "users strive to articulate their desired aims and learn appropriate technological means to obtain them" (Simonsen and Robertson 2). Participatory methods, as Simonsen and Robertson note, were heavily influenced by critiques of rationalist approaches to technology and their proponents recognised that design was an ontological endeavour (4). At the heart of participatory methods is an ethical stand that emphasises that people should be involved in the design of the technological futures that they want to inhabit.

Participatory methods would be an instructive mechanism in which to enable people to have "control over the direction of technological creation" as suggest by Srnicek and Williams. Putting users at the centre of any move towards full automation would be absolutely necessary in order to avoid past mistakes. For example, the failure of modernist architecture and design for the masses, such as the building of UK tower blocks in the 1960s, is a complex, but cautionary tale of the implementation of ideologically focused, albeit well-intentioned, future visions. Utopian "streets in the sky" did not adequately take culture and context into account, particularly the British ideal of cottage housing, and thus their creation led to a way of life that was, and continues to be, less than ideal for many families.

As the integration of participatory methodologies into commercial practice demonstrates, however, user-centred methods are not enough to avoid capitalist relations. In-depth contextual knowledge and data regarding user preferences are all highly valuable in saturated consumer markets. Focus on the user, typically a human, can also reinforce an anthropocentric world view and does not necessarily alter climate change, widespread extractivism and the racialised, gendered and neo-colonial relations involved in this process. As Srnicek and Williams acknowledge, any push towards full automation would need to tackle these issues.

Recently, design methods have emerged that attempt to address this lacuna by aiming to create environmental and socio-technical change. Transition design, devised by Terry Irwin *et al.* at Carnegie Mellon University, for example, recognises that there is "a need for societal transitions to more sustainable futures" (par.1). In the original provocation, Irwin *et al.* argue that in order to address environmental degradation and inequality, new ways of designing are needed. The transition design approach aims to design for complex adaptive systems and draws on living systems theory, which focuses on dynamic patterns between organisms and their environments. It advocates "the reconception of entire lifestyles [at the level of the everyday], with the aim of making them more place-based, convivial, participatory, and harmonizing them with the natural environment" (par. 1). As such, it aims to develop a "cosmopolitan localism" or "pluriversal" approach to design and recognises the value of indigenous ways of living. A transition design approach involves identifying wicked problems, analysing stakeholder relations and mapping socio-technical transitions, among other methods.

Transition design's focus on place-based participation could well be slightly at odds with Srnicek and Williams' vision. However, its approach to systems analysis and related techniques could be beneficial in terms of addressing the environmental issues involved in a push towards full automation and for thinking about how to repurpose existing technologies. A transition approach to mapping effective interventions would also be a useful way to explore a possible decrease in standards of cleanliness as suggested by Hester. Nevertheless, as it stands, a transitional approach to design is not oriented towards gender issues, and when it has focused on gender it has tended to celebrate reproductive labour, a point I explore further below.

At Home with the Gendering of Technologies

In order to move towards an emancipatory post-work future, both Srnicek and Williams and Hester argue for the automation of reproductive labour including a rethinking of domestic technology. Yet, as Srnicek and Williams acknowledge, since the mid-twentieth century the home has witnessed little technological innovation. Technological development has been stifled partly because of a "lack of productivity norms" (Srnicek and Williams 113), but also because domestic space has historically been thought of as feminine and associated with "natural," timeless, and traditional values (Hollows 55).

Even new domestic technologies, such as smart appliances and digital assistants, have tended to reproduce gender norms. For example, Deborah Chambers observes how women (as well as the elderly, disabled persons and children) continue to marginalised in the world of the automated home. This is despite the fact that women are the largest group of home-workers and take on the lion's share of housework and childcare responsibilities. She writes, apart from glimpses of robo-vacuum cleaners, "futuristic designs of a labour and energy saving smart home failed to address the thorny issue of housework" (166). Chambers argues that the labour that supports the running of the automated home has been rendered invisible. Instead, the technologies created for the smart home represent a preoccupation with "working from home facilitated by an array of communication gadgets" (166). Chambers concludes by suggesting that the smart home is an aesthetic vision of technology that invokes "a new masculine domesticity" (166). This new masculine identity, however, "fixes a dominant technologized masculinity" and maintains gendered power relations (166).

The invisibility of domestic labour, care and service work is also central to Hester's arguments regarding digital assistants. Hester documents how, through apps and automated systems such as Siri, the protocols of femininity are being programmed into machines ("Technically Female" par.7). She argues that the female voices of apps and automated systems "exploit assumptions about feminised labour" and reproduce and reinforce normative gender roles ("Technically Female" par. 30). While the presence of machines coded as female may fit with everyday experience, the gendering of technologies is not inevitable. Hester writes that "when technologies 'do gender' it is obviously not natural, but is instead visible as the product of deliberate choices about how best to relate, assist, or persuade the imagined technology user" ("Technically Female" par.33). When automated, the labour involved in organising and assisting is made visible, and what once was considered "women's work" is denaturalised.

Both the analysis of smart homes and digital assistants demonstrate how gendered labour is rendered visible or invisible through technology, and how the work of designers frequently reinforces gendered power relations. This would be a barrier to the design of an emancipatory automated home and a problem for any leftist post-work political project. I would suggest that rather than due to a conspiracy of patriarchal designers, the desires of individual consumers, or a lack of women in the tech industry (although this plays a part), the role that designers play in the materialisation of gender inequality manifests itself in design methodologies. In the case of the smart home, for example, Anne-Jorunn Berg found that designers had ignored the issue of housework because they had assumed that the customer would be a man interested in technology. The structural exclusion of women and others was influenced by normalised discourses of masculinity and technological progress.

As Corinne Bath argues in her analysis of feminist design in computer science, even when usercentred design methods are utilised, gender differences between men and women are often essentialised. Bath suggests that this occurs because, in order to include a range of users, gender differences have to acknowledged in the first place. Even when users are actively involved in the design process, it does not guarantee a critical or deconstructive impulse. If participants make traditional gender assumptions then these are likely to be reproduced in the design of the technology (5). Bath finds that, in the case of participatory design, "designs for empowerment" were most successful when collaborative design approaches were employed together with techniques that highlighted gendered patterns and encouraged critical awareness (Bath 4).

It is also likely that gender norms are reproduced partly as a means of familiarising the user with new technology. In the contemporary marketplace, product design tends to be focused on technological innovation as a driver for profit. New functions that create greater efficiencies are a common focus. Consumers, however, are frequently conceptualised as overwhelmed by technology. Thus, designers often adopt cultural, social and aesthetic norms in order to compensate for the anxiety thought to be generated by newness. In addition, as Bath notes in relation to the gendering of algorithms, "abstraction, formalisation and classification produce the impression of objectivity and a neutral research subject" which disguises explicit and implicit decision making in the developer's work. In effect, these techniques create "hierarchies of knowledge, gendered classifications or dichotomies" (Bath, 5). Thus, established design methodologies often result in "futuristic, white-cubed and white-boxed gizmos" that reproduce Western modernist patriarchal standards of "good" design (Prado and Oliviera par. 7).

Even approaches that attempt to challenge these standards run the risk of essentialising gender. For example, in *Designs for the Pluriverse*, Arturo Escobar explores and furthers the work of designers "who have already embarked on the project of design for transitions" (xii). He asks "can design's modernist tradition be reoriented from its dependence on the life-stifling dualist ontology of patriarchal capitalist modernity towards relational modes of knowing, being and doing?" (xiii). Nevertheless, Escobar draws on ecofeminist theories of matriarchy and nature to incite a return to relational and place-based forms of living. He writes that "in the beginning, there was the mother (in the last instance, Mother Earth)" and argues that "matristic cultures were characterised by conversations highlighting inclusion, participation, collaboration, understanding, respect, sacredness and the always-recurrent cyclic renovation of life" (32). Escobar goes on to explore how design could be reoriented towards these values.

While I do not disagree that a society based on these values is both appealing and needed, the conflation of these conditions with a more "natural" maternal figure essentialises biology and gender. As Catriona Sandilands argues, the constructed "woman-nature" relies on a stable notion of identity, in this case, woman as nurturer. It also reinforces the idea of separate spheres of home and work as "a 'natural' way of organising social life" (Hollows 55). While the mother figure may only be used as a metaphor, it perpetuates exclusionary discourse. As Sandilands argues, the "queers" of Judith Butler and the "cyborg" of Donna Haraway offer more interesting political metaphors than "mother nature" because they are not easily gendered or natured, inhabiting "shifts and fissures of identities in collision and collusion" (19). Thus, rather than working towards a matriarchal culture as suggested by Escobar, I would argue that design (transition design included) should focus on deconstructing and resisting the binaries of sex and gender that manifest themselves in both design discourse and designed objects. By implication, I would argue that this is one of the only ways we can avoid the patriarchal post-work future that Srnicek and Williams outline.

There is a rich body of feminist theory regarding design and technology to draw upon in this endeavour (of which I only have room to explore briefly here). In the mid-1980s, design historian, Cheryl Buckley, observed that women's interventions had been consistently ignored and/or framed as craft. She writes that the "selection, classification and prioritization of types of design, categories of designers, distinct styles and movements, and different modes of production, are inherently biased against women" (3). At a similar time, both Donna Haraway and Lucy Suchman would lay the foundations for a feminist response to dominant design discourse. Haraway's figure of the "cyborg" pointed to the inseparability of human/ machine and natural/artificial, and she urged feminists to explore the enabling possibilities of the relationship between people and machines. Suchman's ethnographic work at Xerox PARC pointed to the assumptions made by AI researchers regarding human-computer interaction, arguing that the models used did not take into account the situatedness of human social behaviour. Both theorists called into question the objectivity of their related disciplines. Through analysis of the way that computer scientists analogised humans with computer systems, Suchman devised the concept of "situated action." Through analysis of the way that "primatologists normalised human gender roles by using primate relations as a model for human relations," Haraway came to the idea of "situated knowledge" (Rosner 41-59). Both theorists offered insights into the partial and contingent nature of knowledge and method.

Suchman, drawing on the concept of "situated knowledge," went on to propose that "feminist arguments regarding the production of knowledge systems point the way to transformations of technology design" (100). She suggested that the feminist transformation of technology should recognise the visible and invisible work that makes up its production, acknowledge the agency of users, and call for heterogeneity

in technical systems. Such man's research influenced the emergence of human-computer interaction (HCI) as a discipline and the development of participatory design. For example, in her discussion of feminist HCI in 2010, Shaowen Bardzell acknowledges the role of feminist standpoint theory in introducing a new domain of user research (1302). She tracks the emergence of feminist practice across a range of design disciplines. Bardzell argues for pluralism ("design artifacts that resist any single, totalizing, or universal point of view"), participation ("participatory processes that lead to the creation and evaluation of design prototypes"), and advocacy (seeking to bring about political emancipation while distributing authority and responsibility for decisions) (1306).

In her more recent work, Bardzell has reflected upon the ethical dilemma involved in feminist design practice. She writes:

We have inherited what might be called a "modernist" tradition of rationalist design, in which a skilled expert produces futures on behalf of everyone ... We also have a 50-year-old postmodernist critique of this epistemology, which has been rehearsed in diverse forms in HCI and design in the 1980s through the 2000s. Finally, there is a sense, developed in philosophy, critical theory, and HCI and design alike, that postmodernism's petits récits have problems identifying preferred futures that meaningfully address issues such as democracy, poverty, sustainability, corruption, and violence toward minorities. The intellectual challenge, therefore, is to find a way to preserve the moral universals, the utopian impulse, and the drive to design toward replacing the current situation with preferred ones, without relying on a now discredited modernist epistemology. (6:9-6:10)

Bardzell turns to the feminist reworking of utopianism to look for inspiration. She suggests that a feminist utopian approach accommodates a plurality of voices, resists relativism by upholding some moral universals, and views utopianism as an activity rather than a completed image (6:11). By implication, Bardzell argues for a mutually beneficial pairing of feminist utopianism and participatory design (6:20). She observes that this is already emerging among a small group of designers working in critical speculative design.

Critical speculative design emerged in the mid-nineties and aims to produce visions of alternative presents and possible futures. It asks users to consider "how the present is futuring" and to reflect on possible alternatives (Malpass 101). Feminist speculative design was born out of a critique of the way in which speculative projects, despite claims to criticality, seemed to reflect the fears of European, white, cisgendered men losing their privilege (Prado and Oliviera). For example, Luiza Prado writes of the way in which many speculative projects have frequently reproduced "a blindly patronising and privileged perspective on technology" (5). Instead, she develops a feminist speculative design based on theories of intersectionality. First and foremost, Prado writes, feminist speculative design would be aimed at "inciting critical thought on how electronic objects might propagate gender oppression under an intersectional perspective" (6). She argues that speculative design is useful in order to democratise and materialise complex academic concepts. Prado uses a range of participatory methods in her design practice. For example, in her work *Speculations* on Birth Control, participants were asked to discuss speculative props (in this case fictional contraceptives) while acting as if they were thirty years in the future. Both the props and temporal displacement were designed to encourage storytelling outside of dominant discourses of gender, the body and the future.

I would argue that a speculative feminist approach could be highly valuable when thinking about the invention and repurposing of domestic technologies. For example, fictional domestic technologies could be produced that radically alter the distribution of labour in the home. Through engagement with these technologies, participants would be encouraged to reflect upon the gendered nature of social reproduction in the present, as well the capitalist colonisation of technological visions of the future.

Designing a Feminist Future

The homogeneity of current future thinking is an issue that Srnicek and Williams suggest has led to the future being cancelled. This is exemplified, they suggest, by a general consensus that "ecological collapse is imminent" and that "contemporary science fiction is dominated by a dystopian mindset" (138). Srnicek and Williams write that the academic left has avoided utopianism because they have been "browbeaten by decades of failure" (138). They use a history of feminism to illustrate their point, suggesting that the radical queer feminism of the 1970s had diminished into a "moderate identity politics" by the 1990s, and "by the 2000s discussions had become dominated by even milder demands ... for women to have equal opportunities to become CEOs" (138). While a crude caricature of the trajectory of feminism, I do agree that popular feminist utopian visions of the future are few and far between. Collective imaginings of the future are dominated either by the techno-utopias of Silicon Valley that includes glass touch screens, completed to-do lists and clean spaces, or the dystopian scenarios of robot takeovers, mechanical failure, environmental destruction, and warfare that circulate on TV and in cinemas. These future visions have changed little since the 1950s. As memories of the future, they influence, and constrain, the collective imagination, designers included.

Srnicek and Williams argue that utopian thinking is essential to generate hope and aspiration for a new world beyond neoliberalism. Drawing upon the arguments of Frederik Jameson, they argue that "the future must be remembered and rebuilt" (138). However, from a feminist perspective, we must ask the question of whose future/past it is that should be remembered and rebuilt. As Rita Felski argues in her discussion of the work of Jameson, "the invocation of history in the singular is a code word for business as usual: left-wing scholarship that remains oblivious or resolutely impervious to alternative visions of what counts as history" (3). History, she writes, is "not one broad river, but a number of distinct and separate streams each moving with its own pace and tempo" (3). As a result, terms like "modern and postmodern lose their universal reach and are revealed merely as perspectives in/on the world, as the fixations of white male theorists" (3). Felski incites us to take into account the "messy variety of human lives, activities, and experiences as they affect the full compass and breadth of historical time" (3).

I would argue that design should look to different sorts of histories in order to create new future imaginaries. This is more a case of scavenging, strategising and innovating, rather than remembering and rebuilding. An approach such as this would mean taking alternative and ordinary histories seriously, as well as turning our attention to memory and "modes of thought that stay close to the lived relations of the everyday" (Samuel ix). People and archives are full of a wealth of local-historical and contextual knowledge that challenges hegemonic visions. What is needed, I would suggest, are critical, speculative and participatory design projects that bring this knowledge to the fore.

In order to do this, however, design would need to rethink its approach to temporality. As Susan Stewart writes "the excision of history from design thinking isolates the understanding that informs the design act from any understanding of the temporal trajectories in which it participates" (276). When design tools do involve placing objects in time, such is the case with speculative design, the models that are used are frequently linear. Linear time, as feminist genealogies remind us, closes down the possibility of radical change. As Fanny Soderback argues in relation to Red Chidgey's work, linear time runs the risk of "forgetfulness," in that it does not allow for a return to the past that would ground us in history and continuity. Whilst, at the same time, through repetition it simultaneously and paradoxically traps us in the past, foreclosing the possibility of a radical break. Therefore, if we are to create feminist automated futures, design methodologies that work with non-linear conceptions of time are needed. Chidgey suggests that it is through a return to, and re-reading of, the past, that we can articulate new feminist agendas of the present and the future.

A design approach inspired by feminist genealogies, stretching between past and future, would avoid both nostalgically looking back to a pristine "natural" past, as well as the progress narratives of a technologically advanced future. Old or forgotten technologies would be seen as having as much potential as new, and by examining alternative histories, a variety of pasts could be opened up. Different reference points are needed in order to create new futures, and by exploring past materialities, alternative experiences, "failures," or what might have been, new realms of possibility could emerge. For example, Dolores Hayden documents the designs of public kitchens by materialist feminists in the 1920s (150), and Ruth Swartz Cohen writes about the rise and fall of the commercial laundry (105). In 1940s Marlborough in New Zealand, Mary Watson ran a mobile laundry service from her motorcycle and sidecar-cum-washing machine, and in 1984 Francis Gabe built the self-cleaning house. While these ventures may not have all been successful, perhaps if these examples were used as inspiration then the automated home could look decidedly different from the "smart" version we have today.

A non-linear material feminist approach to temporality also, by necessity, allows us to critically reflect on the limitations of many techno-scientific narratives of environmental disaster. As Haraway so astutely observes, ecological salvation is frequently "proposed in the time frame of barely secularized 'Western' science" (2007 par. 16). In this story, the natural world of the past is conceptualised as wild, innocent, untouched by previous generations, and as outside time. The past and the present becomes something to be cleared away in order to make futures for coming generations through technological fixes. Haraway writes, "the unbridgeable dichotomy between the traditional and the modern is as much a frontier myth as the cordon sanitaire between nature and culture or the organic and the technological" (2011 par. 18). Instead, she incites us to "stay with the trouble" and learn "to be truly present, not as a vanishing pivot between awful or Edenic pasts and apocalyptic or salvific futures, but as mortal critters entwined in myriad of unfinished configurations of places, times, matters and meanings" (Haraway Staying with the Trouble 1).

Haraway also emphasises the ethics of care that would necessarily emerge from being truly present. She writes how non-teleological time would involve a responsibility to take care of people, animals, plants, places and things for generations past and for those yet to come (2011). A technoculture with this orientation would have a "familial, generational duty to their failures, as well as their accomplishments" (2007 par 9). Technocultural people, Haraway writes, "must study how to live in actual places, cultivate practices of care, and risk on-going face-to-face encounters with unexpected partners ... There will be no perfection, but there can be ongoing and effective care that stays alert to many sorts of history" (2011 par 18). A feminist design methodology informed by this sort of orientation would aim to incite responsibility to care for pasts, presents, and futures, without resorting to dominant technological narratives. As Joseph Kay argues in his critique of *Inventing the Future*, if Srnicek and Williams took their approach in this direction it would "constitute a bricolage of applied scientific and place-based knowledges aiming at a cooperative connection with, rather than control of, the material-energetic flows of wider ecological webs: a production of nature that is neither a frontier to conquer nor an idyll to return to." (Kay par. 31). This would entail designers getting close, sometimes uncomfortably, to communities (human and non-human). While designers are familiar with putting the user at the centre of their methods, this would necessitate a different ontological orientation from the user-as-individual-consumer that design is currently beholden to.

Conclusion: Towards a Feminist Design Methodology

I began this article by exploring the hopes and fears of automation outlined in *Inventing the Future*. I documented Srnicek and Williams' critique of "folk politics," their analysis of capitalism as "expansionary universal," and their call for a post-work platform whereby a "universalism from below" could emerge. I explored both Srnicek and Williams' call for a fully automated economy made possible by the invention and repurposing of technology and Hester's arguments regarding a rethinking of living arrangements, living conditions and domestic technologies. In both instances, I argued for the importance of design in advancing the post-work project. At the same time, I suggested that without changes to design methodologies, the depressing patriarchal scenario outlined by Srnicek and Williams would be hard to avoid. Thus I explored three terrains (user-centred design, the gendering of technology and the conceptualisation of the future) in which design methods reproduced sociotechnical hegemony, but that also offered opportunities to move the post-work project forward.

To a certain extent, the limits and possibilities of design methodologies in each of these terrains echo the ideas put forward in *Inventing the Future*. The analysis of design methodologies in relation to the gender politics of post-work outlined here exemplifies the way in which the local, personal and the everyday can "end up smothered by an all-embracing series of capitalist relations" (75). For example, I documented how since the 1980s there has been a relational turn in design discourse and practice with a user-centred paradigm emerging as the preferred methodology. This shift was influenced, in part, by the situated methodologies of participatory design and ethnographic methods. What were once methods associated with radical interventions involving the co-design of contextually appropriate technologies, have become the mainstay of corporations using empathy as a means to a market. This does not mean that participatory

550 — S.E. Baker DE GRUYTER

methods are redundant, just that they should be accompanied by politics. Like "folk politics" the local and participatory are essential but are not strategically sufficient to challenge neo-liberalism, or indeed, to enable a move away from global capitalism. Bath's findings are instructive in this respect when she found that "designs for empowerment" were most successful when participatory design approaches combined collaborative as well as pedagogical approaches to gender inequality.

In order to make an emancipatory post-work/post-capitalist future a reality, design methodologies would need an ontological reorientation that would go beyond the conceptualisation of the individualistic user-as-consumer, a project already underway in critical design and transition design. At the same time, I observed how these design disciplines can also reproduce privileged perspectives or essentialise gender. Thus, I argued for methods that aim to deconstruct and resist the binaries of sex and gender that manifest themselves in both design discourse and designed objects. In the final parts of the article, I began to sketch a feminist design methodology inspired by feminist theory and emergent design practice. With these arguments in mind, and in the spirit of Srnicek and Williams, I would like to set out the beginnings of a methodology that would aim to take us somewhere slightly closer to a life devoid of tedious drudgery. This would:

- Aim to challenge inequality through design. A feminist approach to design would aim to queer the binaries of sex and gender. It would utilise an intersectional approach.
- Hold on to a notion of feminist utopia. As Bardzell suggests, a feminist reworking of utopia would include a plurality of voices, uphold some moral universals and view utopianism as an activity rather than a completed image (6:11).
- Explore social reproduction as a site of possible automated and systemic change. There is a rich
 body of feminist knowledge that designers should utilise in order to avoid the reproduction of gender
 inequality through design. Housework, care and service work should not be excluded from radical
 innovation by default.
- Combine participatory methods with techniques to encourage critical awareness. A feminist
 approach to design would build on the strengths of participatory design, making sure that technologies
 are not imposed upon people but combine designerly and non-designerly expertise. It would merge
 collaborative approaches with critical pedagogy.
- Utilise an expanded concept of technology that does not just involve the new or the digital.
 A design methodology with this emphasis would look to existing and old technologies as offering possibilities for innovation.
- Experiment with design methods that work with non-linear concepts of time. Transformative futures are only possible by re-examining and (perhaps retelling) the stories told about the past. A feminist design methodology would recognise the value in alternative histories, memories of ordinary experience, failure and what might have been. It would experiment with anachronistic methods.
- Involve an ethics of care that goes far beyond empathy as a means to a market. This approach
 would recognise the responsibility that designers have to care for the world and all its inhabitants
 (past, present, and future; human and non-human).

While these demands may seem modest and unremarkable to the majority of feminists, I believe that they could, at the very least, create alternative designs for the future: perhaps ones in which "smart" technologies would allow everyone to have more free time.

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