

# Learning from Feminist Critiques of and Recommendations for Industrial Design

PROCHNER Isabel\* and MARCHAND Anne

Université de Montréal

\* Corresponding author e-mail: [isabel.prochner@umontreal.ca](mailto:isabel.prochner@umontreal.ca)

doi: 10.21606/drs.2018.355

This paper shows how a feminist perspective can inform industrial design theory and practice. It provides a list of feminist-informed critiques and proposals toward industrial design based on a literature analysis of existing feminist work in industrial design and analysis of three feminist-driven co-design projects. The results show that a feminist perspective identifies systemic problems in industrial design based on the presence of power and masculinity, unequal power dynamics between people and negative situations facing women. These problems appear at the multiple levels of industrial design and are a theme throughout feminist critiques in the field. In turn, feminist recommendations are typically grass roots, relying on actor interventions that draw on women's perspectives and/or feminist perspectives. These results offer a range of contributions to industrial design. Broadly speaking, they offer an alternative perspective to industrial design to help the field move forward and respond to social imperatives. The specific critiques and recommendations can also be broadly applied, as they pinpoint problems within the field and guide alternative practices.

*feminism; industrial design; literature analysis; co-design*

## 1 Introduction

There have been many claims in the past few decades about the end of feminism and of its relevance where, for instance, "feminism is [perceived to be] unfashionable, passé, and therefore not worthy of serious consideration" (Gamble, 2006, p. 38). In these situations, it has been claimed that feminism has achieved its goals and continued action is trivial (see, for example, Hill, 2015) or is, at the extreme, a form of entitlement or bullying against men, as claimed on sites like A Voice for Men ([www.avoiceformen.com](http://www.avoiceformen.com)). However, feminist activity is still going strong. Major celebrities like Beyoncé, Emma Watson and John Legend (Lindner, 2014) and even male heads-of-state like Justin Trudeau (Office of the Prime Minister, n.d.) and Barack Obama (Obama, 2016) are self-proclaimed feminists. They have noted many remaining feminist concerns including the representation of women in positions of political power, equal pay, gender stereotypes and sexual harassment and objectification (Lindner, 2014; Obama, 2016; Office of the Prime Minister, n.d.). The broader public has also repeatedly mobilized to support feminist initiatives. This includes the Pussy Hat Project



This work is licensed under a Creative Commons Attribution-NonCommercial-Share Alike 4.0 International License.

<https://creativecommons.org/licenses/by-nc-sa/4.0/>

([www.pussyhatproject.com](http://www.pussyhatproject.com)) and the recent #me too campaign that flooded social media and the public consciousness.

Broadly speaking, feminism is based on a social justice premise that women live in unjust conditions, which can and should be changed (McCann & Kim, 2010). Operationally, feminism can be seen as an ideology, a conceptual framework that helps us navigate and act in the social and political worlds (Freeden, 2003; Goodwin, 2007; Van Dijk, 1998). In this sense, feminism could be seen to operate as a lens that guides thinking and action.

Diverse members of society apply a feminist lens in their private and public lives. However, issues of feminist concern permeate all levels and parts of society, which also includes professional fields like politics, economics, medicine and sports (Walby, 2011). Feminist work extends to these arenas and there is a history of feminist initiatives in a range of professional fields (Walby, 2011). Design and, specifically, industrial design is no exception. There is a relatively long and diverse history of feminist work in industrial design. This includes theoretical investigations, design research and feminist-informed practice, where many examples are documented in academic articles and books.

This paper is situated at the intersections of feminism and industrial design; it focuses on feminist work in industrial design and its value and contributions to industrial design theory and practice. Specifically, it investigates the lessons that can be learned from feminist critiques and proposals toward industrial design.

I conducted this research as part of my doctoral studies at the Université de Montréal, supervised by Anne Marchand. Given my background, this study is anchored in a Western context, which comes across in the planning, execution and results. Further, feminism is a complex topic where no discussion could adequately represent its many forms, roles, applications and perspectives. Similarly, industrial design is a large and rich field. This project is based on a broad and general understanding of feminism and industrial design, and looks for generalizations about their intersections. Together, these factors show that this research project represents a limited and partial perspective, despite its many contributions. Future studies from different contexts and with different treatments of feminism and industrial design would offer valuable contributions to this research topic.

## **2 Theoretical foundations**

In this study, I focused on feminism as an ideology, which guided my understanding of its operations. This includes its operation as a lens, mentioned above, but also its processes of critique and proposal. Ideologies often hold and help work toward a vision of a model society (Sargent, 2013). Broadly and generally speaking, a feminist perspective envisions a society based on a form of equality and justice for women. It then guides processes of critique and action to achieve this vision. For example, a feminist perspective could help identify and explore the range of issues that negatively affect women and establish and carry out plans for change with the broad goal to improve women's lives (McCann & Kim, 2010).

When applied to industrial design, a feminist perspective and its processes of critique and action could offer a range of valuable insights. For instance, it could highlight problems in industrial design and suggest changes that respond to these problems. These insights could be applied to industrial design theory and practice to help align industrial design with feminism and its social goals. The resulting changes could inform greater social responsibility in the field by identifying and addressing issues surrounding women's conditions.

In addition to these general statements surrounding the contributions of a feminist perspective to industrial design, a deeper investigation of its operations and areas of attention help identify likely subjects of its critiques and the focus of its recommendations. To begin, as a sort-of conceptual framework or lens, feminism could be seen as a relatively holistic perspective that can operate at many levels. It has many potential points of intersection with industrial design: it promises to offer critiques and recommendations at multiple levels.

Beginning with its potential critiques at an epistemological level, a feminist perspective is known to be critical of presumed universal knowledge (see, for example, Haraway, 1988). It explains that knowledge and truth are not universal and, instead, are “partial, situated, subjective, power imbued and relational” (Hesse-Biber, 2007, p. 9). Further, it claims that women’s needs and perspectives are not always incorporated in dominant knowledge (Hesse-Biber, 2007).

A feminist epistemological perspective also tends to challenge the masculinity of knowledge and systems. The categories of masculine and feminine refer to genders fostered through the social world (Marchbank & Letherby 2007). Typically and traditionally, feminine and masculine genders and their characteristics are seen to be distinct and binary. The Bem Sex Role Inventory (1974) is a psychology framework that categorizes American gender characteristics based on a study of socially desirable traits for females and males (Bem, 1974). For example, it notes that feminine characteristics include loyalty and affection, while masculine traits include ambition and competition (Bem, 1974). Masculine and feminine are also associated with more abstract concepts. For instance, the masculine is associated with order and linearity and the feminine is said to emphasize process, dialog and the whole (Wilshire, 1989).

At a more concrete level, a feminist perspective could be critical of situations involving the inequality, injustice and oppression of women.

In response to its epistemological challenges to universal and masculine knowledge, a feminist perspective could encourage the incorporation of many perspectives in knowledge and knowledge building, including women’s perspectives (Haraway, 1988; Hesse-Biber, 2007). This range of perspectives would help provide richer and more complex knowledge (Haraway, 1988; Hesse-Biber, 2007). At a more concrete level, a feminist perspective could also provide responses to its critiques of situations that negatively effect women. These responses could represent a more equal and just situation for women.

### **2.1 Implications for industrial design**

Feminist critiques and proposals at these various levels could apply directly to industrial design. Feminist epistemology promises to show that many aspects of industrial design are gendered and masculine. In response, feminist epistemology would likely suggest opening the field to new perspectives including women’s perspectives. At a more concrete level, a feminist perspective could identify situations in industrial design involving the inequality, injustice and oppression of women. In response, it could guide solutions to these issues based on a form of equality and justice for women.

As mentioned earlier, these critiques and proposals could provide lessons for industrial design theory and practice. For instance, they promise to highlight issues in industrial design, pitfalls that designers ought to avoid. They could also propose solutions to these issues that could be broadly applied. This work could help align industrial design with feminism and its social goals and inform greater social responsibility in the field by identifying and addressing issues surrounding women’s conditions.

## **3 Research focus**

This paper provides a list of feminist critiques and proposals toward industrial design and a discussion about their value and contributions to industrial design. It moves beyond the hypotheses about feminist critiques and proposals toward industrial design provided above and presents real-life examples.

As mentioned, there is a relatively long and diverse history of feminist work in industrial design. That said, few works provide a meta-review and analysis of the intersections and interplay of feminism and industrial design, as done here.

## **4 Methods**

### **4.1 Literature analysis**

The first method draws on the existing feminist work in industrial design. It involved a literature analysis of the range of writing involving the intersections of feminism and industrial design. These works were identified through Google and the book and article catalogues at university libraries in Montreal. The search used the keywords feminism and feminist along with industrial design and design, and their French translations. Combining Google with more formal and academic databases helped identify a broad range of literature including books, articles, theses and dissertations, blogs and interviews.

More than 50 texts were identified and included in the analysis. The analysis was based on a general inductive and comparative approach to qualitative data analysis (Merriam, 2009), specifically thematic analysis (Mills, Durepos & Wiebe, 2010; Schwandt, 2007). It involved reviewing each text for instances of feminism and mention of industrial design, identifying intersections between each and then looking for critiques and proposals relating to industrial design at each point. I situated each critique and proposal based on the text's context (i.e. time and place), the type of feminism it applied and the aspect of industrial design it addressed. This categorization was based on a framework of feminism and of industrial design, presented in the next section. As a last step, I reviewed the variety of critiques and proposals and organized them into categories and looked for emerging themes.

### **4.2 Analytic frameworks**

The following is a brief introduction to the analytic frameworks mentioned above. The discussion begins with an overview of the framework of feminism. This is followed by the industrial design framework.

#### **4.2.1 Framework of feminism**

All ideologies, including feminism, are based on several core concepts that are, for the most part, shared by all adherents (Freeden, 2013). However, there are different variants of each ideology that can prioritize certain core concepts over others or inject additional peripheral concepts (Freeden, 2013). When this happens, the general ideology can be understood as an ideological family with a series of sub-ideologies (Freeden, 2013), sometimes referred to as ideological strands. Feminism is no different. It includes many ideological strands like radical feminism, eco-feminism and postcolonial feminism. For the analysis, I categorized the feminism behind each critique and proposal based on an understanding of the core concepts held by the feminist ideological family and its series of strands.

#### **4.2.2 Framework of industrial design**

The categorization was also based on a framework of industrial design. The framework applied here is an amalgamation of the writing of several key design theorists. A major component includes Dorst's model of design activities he presented in several of his publications and in detail in *Design Expertise*, a book he co-authored with Lawson (2009). This is supplemented with a range of theory on design projects from Boutinet, Findeli, Bousbaci and Vial.

The model includes different categories and levels of design activity moving from large-scale to small-scale.

Table 1 Industrial design framework.

|   |  |
|---|--|
| <b>Design profession:</b> Profession refers to the range of design organizations (institutions, associations, and consultancies), design knowledge and theories, and the entire population of designers (Lawson & Dorst, 2009).   |  |
| <b>Practice external to a project:</b> Design practice refers to the place and role of each individual in the larger professional community (Lawson & Dorst, 2009). It refers to their professional identity like their relationships with other practitioners and factors like style, attitudes and interests that they bring to their work (Lawson & Dorst, 2009). It also refers to their activities including design work outside a project (e.g. developing a company vision or hiring employees) and design work in a project (Lawson & Dorst, 2009). |  |
| <b>Design project:</b> The design project is the structural unit of design practice (Vial, 2014). It involves the activities to develop an object and ends with the establishment of a prototype (Boutinet, 2012). Its components are design practice, process and objects.   | <b>Practice in a project:</b> This is the application of design practice in a design project, as introduced in the previous category (Lawson & Dorst, 2009). |
|   | <b>Processes:</b> Design processes are the methods (Lawson & Dorst, 2009)  |
|   | <b>Object:</b> The object is the “product of the design project” (translation by author; Findeli & Bousbaci, 2005, p. 42).                                   |

In addition to these categories, the framework also included ‘other projects’ like production, marketing and object reception. Feminist contributions to industrial design pertain especially to its social relationships and contexts, so it’s appropriate to consider related projects that follow industrial design as extensions of this framework. These subsequent projects align with Boutinet’s broad definition of a project and may include similar structural components to design projects including the actor, process and object realms. As an example, the project of object reception would involve the design artefact, its user and the user’s actions (Findeli, 2004; Findeli & Bousbaci, 2005).

### 4.3 Project-grounded research

In contrast to the literature analysis, the other method and data source was more exploratory and was based on project-grounded research (Findeli, 2004). I facilitated and analysed three feminist-driven co-design projects with members of a feminist creative organization in Los Angeles. Participants worked from their feminist perspectives throughout each project and allowed it to guide their thinking, decision-making, interactions, etc. Details about the project were recorded through group and individual documentation.

At the end of each project, the participants and I discussed how the feminism intersected with the project. I also conducted a thematic analysis of the project documentation and of notes from the final group discussion following a similar approach to the literature analysis. It involved reviewing the documentation for instances of feminism and mention of industrial design, identifying intersections between each and then looking for critiques and proposals relating to industrial design at each point. As an example, a critique could be a situation where a participant challenged a design process or an assumption in product development. In turn, a recommendation could be a situation where a participant expressed a preference for a particular process or object characteristic. Next, I situated each critique and proposal using the feminism and industrial design frameworks. As a final step, I reviewed the variety of critiques and proposals and organized them into categories and looked for emerging themes.

My research focused on the outcomes of each method, as well as trends across their results. This paper focuses mainly on the results of both methods combined.

## 5 Results

This section presents feminist critiques and proposals toward industrial design identified through my research. However, before entering the heart of this section, the next section includes a brief discussion and contextualization of the results from each data source.

### **5.1 Differences between the data-sources**

The literature analysis and project-grounded research provided distinct results. This is related to the context of the feminist perspective and its application to industrial design. The literature addressed the range of levels of the industrial design framework and represented a wide variety of feminist strands, coming from different contexts and time periods. There were also more critiques than recommendations for change. In contrast, the intersections of feminism and industrial design in the co-design projects centred on the design project. While there were few explicit critiques, feminist perspectives guided the design practice. Its orientations and preferences can be interpreted as feminist recommendations to industrial design. Finally, there were less examples and less diverse feminisms than represented in the literature, but each co-design project was a rich source of information and an example of contemporary, applied feminism.

Each method was very different and had its strengths and weaknesses. Yet, the strengths of one helped make up for the weaknesses of the other. For instance, the quantity of literature helped compensate for the limited number of co-design projects. Further, the depth of interrogation in the project-grounded research helped compensate for the sometimes-limited detail in the literature.

### **5.2 Similarities within the results**

Despite the differences between the two research phases and their results, the outcomes aligned well and conform to certain broader trends. Despite the incredible diversity within feminism, feminist critiques can often be traced to common and consistent issues that simply materialize differently in different contexts. These systemic problems include: the presence of power and masculinity, unequal power dynamics between people and negative situations facing women. A feminist perspective identifies incarnations of these problems at the range of levels in the industrial design framework. This dynamic is illustrated in Figure 1.

In turn, feminist responses touch on the multiple levels of the industrial design framework. However, there appears to be a preference for grass-roots action relying on actor interventions that draw on women's perspectives and/or feminist perspectives. These actors could include designers, users or other individuals involved in a stage of the design project or subsequent projects. This dynamic is illustrated in Figure 2.

Beyond these broader trends, specific feminist critiques and proposals at each level of the industrial design framework are provided in Table 2. This table follows Figures 1 and 2. The critiques and proposals are coded with letters A-L, which refer to specific positions on the figures.

Together, these critiques and recommendations also conformed with and confirmed the hypotheses that feminist epistemology would show that many aspects of industrial design are gendered and masculine and would recommend opening the field to new perspectives including women's perspectives. As suggested, they also identified situations in industrial design involving the inequality, injustice and oppression of women and guided solutions based on a form of equality and justice for women.

These trends and the majority of the critiques and proposals apply to the range of feminist perspectives. However, as explained earlier, there are a variety of feminist perspectives and I associated each critique and recommendation with a feminist strand. In some situations, a critique or recommendation is specific to a certain feminism, as discussed in the section that follows.

### **5.3 Differences based on the feminist perspective**

This section discusses some of the differences within the results based on the feminist perspective applied in each example. First, most of the feminist recommendations involve drawing on women's perspectives and/or feminist perspectives. That said, cultural feminism, eco-feminism and, generally, less postmodern feminist perspectives tend to characterize a women's perspective, something that other feminisms don't typically do. There is generally an especially pronounced link between women's and feminist perspectives and the feminine in cultural, eco- and less postmodern

feminisms. Similarly, different feminist perspectives also informed the definition of women, the point of focus of many feminist critiques and recommendations toward industrial design. As an example, intersectional feminist perspectives were concerned with the needs of diverse women working in design or using design products, whereas cultural feminisms focused on relatively non-diverse, female and feminine designers and users.

Beyond the basic concern for issues like inequality, injustice and oppression, different feminist perspectives understood the causes of these issues in different ways and some put forward additional points of focus. These additional concepts, their levels of emphasis and their levels of priority varied between examples. For instance, an eco-feminist perspective has a relatively strong emphasis on the environment, a socialist feminist perspective is concerned with the economic world and third wave and intersectional feminist perspectives are concerned with the needs of women and other disadvantaged populations.

Varying levels of radicality were also present in the data and impacted the depth of interrogation and the extent that the recommendations were similar to the status quo. More radical feminist perspectives tended to interrogate industrial design at more abstract and deep-rooted levels and likely inspired more extensive and different recommendations.

Certain of these differences are represented in the figures and tables that follow. However, as mentioned above, this results section focuses primarily on broader insights and generalizations across the data.

#### ***5.4 The problems feminism finds with industrial design and the recommendations it proposes***

As mentioned above, the results are presented in two phases. This begins with two figures that illustrate broader trends in feminism's critiques and recommendations toward industrial design. The figures are followed by a table that illustrates specific feminist critiques and proposals.

Feminist perspectives identified systemic **problems** in industrial design based on certain common and consistent issues. These appear at the multiple levels of the industrial design framework, but can materialize differently at different levels and in different contexts.

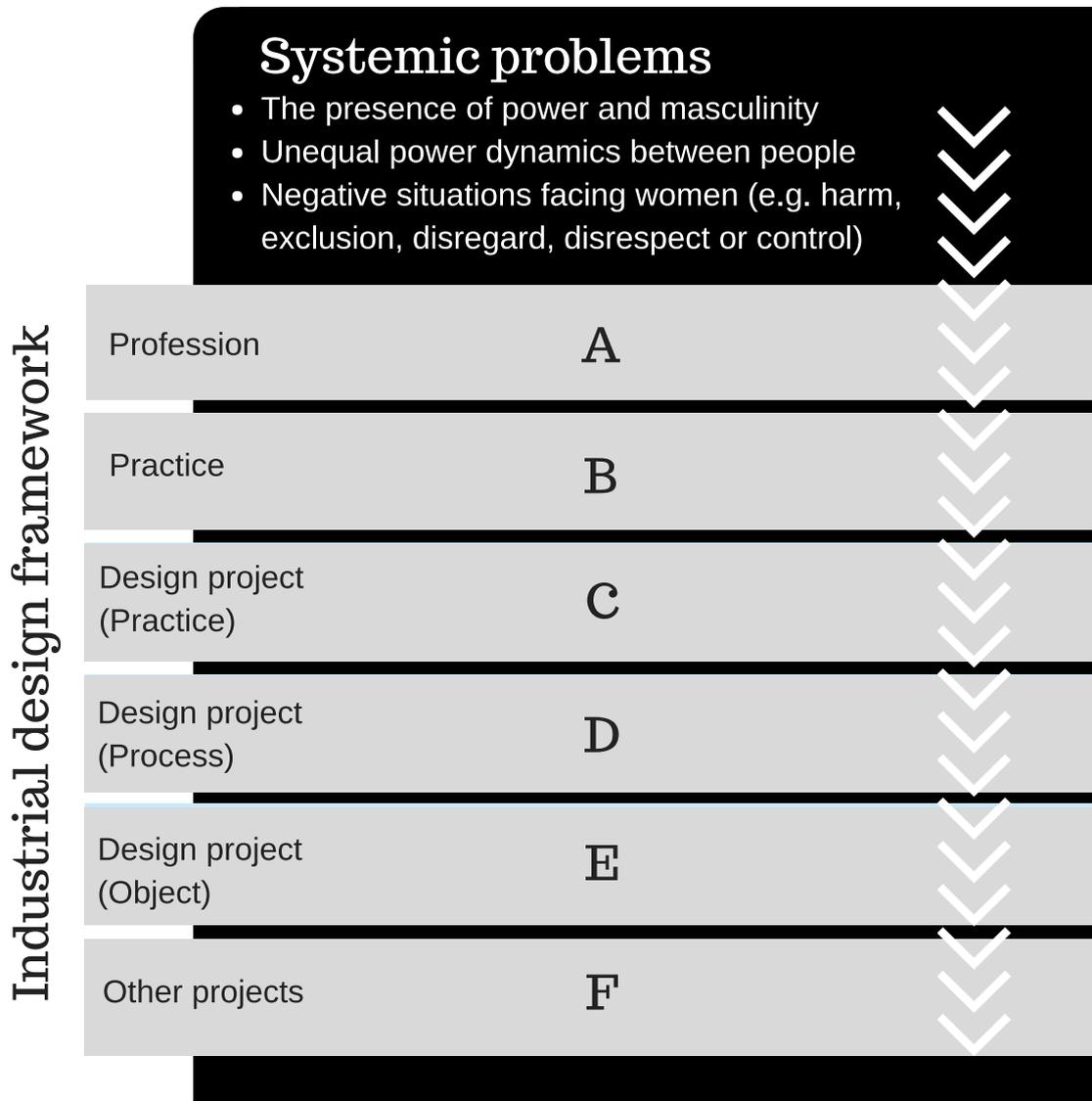


Figure 1 The system and context behind the problems feminist perspectives find with industrial design

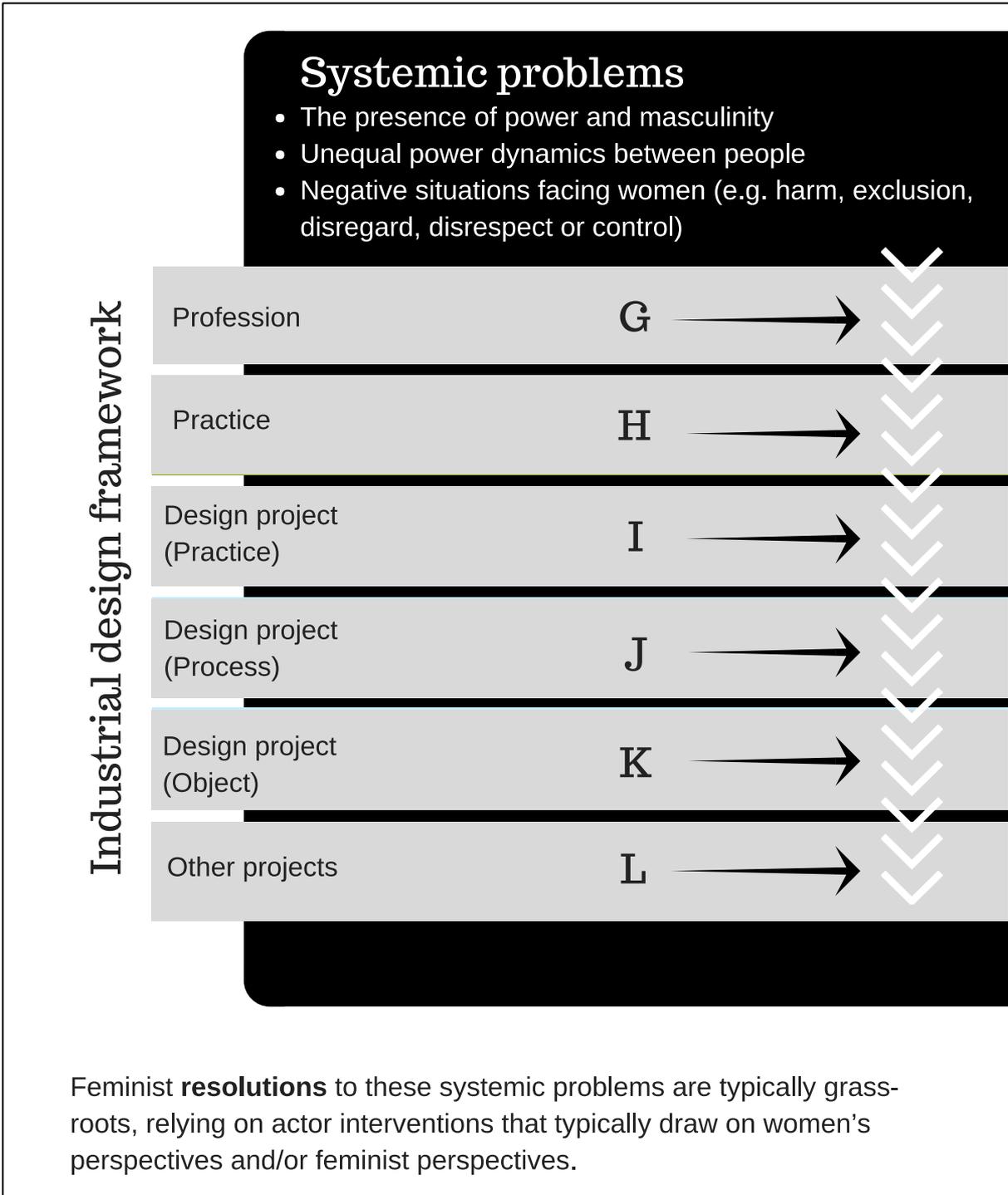


Figure 2 The system and context behind feminist proposals for industrial design

Table 2 Summary of the problems feminist perspectives find with industrial design and the recommendations they propose

|           |  |
|-----------|--|
| Critiques | <p style="text-align: center;"><b>A: Profession</b></p> <p>Industrial design's rooting in modernism</p> <ul style="list-style-type: none"> <li>As an example, Sparke (1995) explained that design movements and tastes are gendered and political where modernism is a masculine and patriarchal design style: it is a "high-minded", authoritarian, and heavily politicized programme of architectural and design intervention and reform, based on rational principles" (1995, p. vii). Sparke also explained that modernism rejects feminine taste and minimizes women's power through its rules for good design that minimize the typically female consumers' creativity and agency (1995).</li> </ul> <p>Industrial design's rooting in the marketplace (this critique can be more or less extreme depending on the feminism applied)</p> <ul style="list-style-type: none"> <li>One of the most extreme examples comes from a socialist feminist perspective, which argued that the industrial design profession as a whole including its foundations and its activities is problematic because it perpetuates inequalities through its associations with capitalism (Cole &amp; Dahl Crossley, 2009).</li> </ul> <p><b>Specific to eco-feminism</b></p> <p>Industrial design's relationships with the military and corporations</p> <ul style="list-style-type: none"> <li>This critique can be found in a short text written by Amon (1999).</li> </ul>                |
|           | <p style="text-align: center;"><b>G: Profession</b></p> <p>Realignment of industrial design toward postmodernism</p> <ul style="list-style-type: none"> <li>Sparke was cautiously hopeful that postmodernism could enable positive changes by challenging design rules and norms and engaging with more feminine aesthetics (1995).</li> </ul> <p>Realignment of industrial design toward social and sustainability concerns</p> <ul style="list-style-type: none"> <li>As an example, Rothschild proposed a balance between market priorities and contextual, social and sustainability concerns (1999).</li> </ul>   |
| Critiques | <p style="text-align: center;"><b>B: Practice</b></p> <p>The power and masculinity present in industrial design does not leave a clear place for female design professionals and can make female designers feel uncomfortable in their roles</p> <ul style="list-style-type: none"> <li>There is a large body of work that explores this issue. Many of these texts seem inspired by Buckley's 1986 article, "Made in patriarchy: Toward a feminist analysis of women and design." Buckley explained that "[p]atriarchy has circumscribed women's opportunities to participate fully in all areas of society and, more specifically, in all sectors of design, through a variety of means-institutional, social, economic, psychological, and historical" (1986, p. 4). This guides perceptions of women's skills and roles and the tasks women are best suited to (Buckley, 1986).</li> </ul> <p>This also applies to other projects and institutions in the design community like design scholarship and design education</p> <ul style="list-style-type: none"> <li>As an example, Clegg and Mayfield were critical of the longstanding associations between women and decorative arts and men and technology (1999). They explained that these associations carry into design education where women tend to choose softer design fields like textiles and jewellery as opposed to harder fields like product and furniture design (Clegg &amp; Mayfield, 1999).</li> </ul> |
|           | <p style="text-align: center;"><b>H: Practice</b></p> <p>Inject women into industrial design as active, empowered, recognized and respected actors that work from their point of view as women and/or as feminists</p> <ul style="list-style-type: none"> <li>This is the implicit or explicit goal of many texts, including works by Martínez (2007), Attfield (1989) and Bronet and Layne (2010) that are discussed below.</li> </ul> <p>Support these women through affirmative action and targeted professional associations and competitions</p> <ul style="list-style-type: none"> <li>For instance, Martínez suggested establishing "organizations created exclusively for female designers, shops where items were exclusively designed by women, special issues of magazines, e-mail lists about female designers, and design groups composed entirely of female designers" (2007, p. 19).</li> </ul>   |

|                 |  |
|-----------------|--|
|                 | <p>Design scholarship, including design history, should focus on women in design and their interests and experiences, and apply feminist methods</p> <ul style="list-style-type: none"> <li>For example, Attfield sought to broaden the scope of design histories to include more women and recommended that design historians identify female designers to serve as role models (1989). However, in order to make a large impact, she noted that design historians must also address the way history is told at a more methodological level (Attfield, 1989).</li> </ul> <p>Change the focus and content of design education to include more feminine and feminist content</p> <ul style="list-style-type: none"> <li>As an example, Bronet and Layne suggested that a gender balance in design could be supported through design education (2010). This could involve empowering female students and teaching to feminine and masculine interests and values (Bronet &amp; Layne, 2010).</li> </ul>  |
| Critiques       | <b>C: Project (practice)</b>   |
|                 | <p>The power and masculinity present in industrial design does not leave a clear place for female design professionals and can make female designers feel uncomfortable in their roles</p> <ul style="list-style-type: none"> <li>Many of the examples of critiques pertaining to practice external to the project also apply here. This includes Buckley's writing (1986) and the work it inspired.</li> </ul>  |
| Recommendations | <b>I: Project (practice)</b>   |
|                 | <p>Inject women into industrial design as active, empowered, recognized and respected actors that work from their point of view as women and/or as feminists</p> <ul style="list-style-type: none"> <li>Like this proposal regarding design practice external to the project, there is a variety of literature that supports this recommendation. As an example, Perkins stressed that women should be active in designing products for female users, since their own experiences could inform products and new feminine visions "of what is aesthetically pleasing, [and] of what is most comfortable and easy to use" (1999, p. 125).</li> </ul> <p>Work outside traditional professional and consumer structures</p> <ul style="list-style-type: none"> <li>As an example, Rawsthorn noted that new design technologies and contexts of practice can empower female designers: "[t]he possibility of raising investment from crowd funding, publicizing work on social media and selling it online is enabling a new generation of designer-entrepreneurs to pursue their own objectives by operating independently" (2014, para. 14).</li> </ul> <p>Engage in non-hierarchal interdisciplinary collaborative work</p> <ul style="list-style-type: none"> <li>These arguments are seen throughout Rothschild's writing (see, for example, Rothschild, 1995).</li> </ul> |
| Critiques       | <b>D: Project (process)</b>  |
|                 | <p>Rigid and linear design thinking</p> <ul style="list-style-type: none"> <li>This is an implicit critique, based on support for a problem-setting approach to design thinking seen during the co-design projects.</li> </ul> <p>Hierarchal and patriarchal group dynamics in collaboration</p> <ul style="list-style-type: none"> <li>This critique can be seen in Rothschild's writing (see, for example, Rothschild, 1995).</li> </ul> <p>Reliance on technology like computers and hand-tools</p> <ul style="list-style-type: none"> <li>As an example, this was noted by Clegg, Mayfield and Trayhurn who saw industrial design and its associations with technology, hands-on activities, hand tools and getting dirty in the workshop as masculine (1999).</li> </ul>  |
| Recommendations | <b>J: Project (process)</b>  |
|                 | <p>Apply design thinking based on problem setting</p> <ul style="list-style-type: none"> <li>The design thinking in the co-design projects followed problem setting, which is a systemic and complex approach to design thinking. Many of the participants complimented this approach for its feminist associations.</li> </ul> <p>Apply methods like user research, co-design and participatory design, inclusive design and critical design</p> <ul style="list-style-type: none"> <li>For example, Rothschild noted that feminism guides the use of design activities that incorporate and respect users like user research and participatory methods (1995).</li> </ul> <p>Interrogate and modify existing design methods based on feminist perspectives</p>   |

|                  |  |
|------------------|--|
|                  | <ul style="list-style-type: none"> <li>As an example, this is seen in Prado de O. Martins' suggestions for critical and speculative design (2014).</li> </ul> <p>Co-design should involve an equal and respectful collaborative group dynamic where each group member applies their individual perspective and expertise</p> <ul style="list-style-type: none"> <li>Discussions throughout my co-design projects showed that feminism supports a respectful and relatively equal collaborative process, but also a dynamic where each group member draws on their individual strengths. This provides a balance between feminism's emphasis on equality and the collective with its other focus on independence and self-expression.</li> </ul> <p>Engage in self-reflection about power and position throughout co-design projects</p> <ul style="list-style-type: none"> <li>This point was identified during the co-design projects, as it was key to maintaining the balance between collaboration and independence during group work. It also helped ensure a relatively equal power dynamic between group members.</li> </ul> <p>Embrace new technologies like 3D printing and define their meaning based on feminist perspectives</p> <ul style="list-style-type: none"> <li>For instance, although Clegg, Mayfield and Trayhurn were concerned that gendered design competence could be exacerbated by increasing computerization and technologization, they noted that digital design processes were a recent phenomenon and may be open to new gender readings (1999).</li> </ul> <p>Pay attention to the working environment and choose a space that would be empowering to the design team</p> <ul style="list-style-type: none"> <li>Participants in each co-design project stressed the significance of the working environment. An empowering environment has a positive impact on the project by supporting and inspiring team members.</li> </ul>   |
| <b>Critiques</b> | <p style="text-align: center;"><b>E: Project (object)</b></p> <p>Design objects created for a 'typical' male user and based on masculine aesthetics</p> <ul style="list-style-type: none"> <li>For instance, Vostral and McDonagh were critical of products designed primarily for an able bodied male user, which ignores the needs of other users including women and makes them accommodate to objects and their surroundings (2010).</li> </ul> <p>Design objects that ignore female users and their needs</p> <ul style="list-style-type: none"> <li>Vostral and McDonagh's arguments (2010) could also apply to this critique.</li> </ul> <p>Design objects that perpetuate unequal social dynamics</p> <ul style="list-style-type: none"> <li>As an example, Ehrnberger, Räsänen and Ilstedt explained that gendered product language reinforces gender norms, roles and hierarchies (2012).</li> </ul> <p>Design objects that gender or sexualize women outside their own terms</p> <ul style="list-style-type: none"> <li>For instance, in "Representations of women and race in the Lancastershire cotton trade," Mumby was critical of the export of cotton from Britain to India and China in the 19th century (1989). She critiqued the prints on the cotton and its advertising, since it depicted troubling scenes that sexualized women and that represented power dynamics between colonists and colonies (Mumby, 1989).</li> </ul> <p>One dimensional design objects</p> <ul style="list-style-type: none"> <li>The project-grounded research showed that feminism offers an implicit critique of industrial design's relatively narrow focus and could teach design to consider and operate at additional, more complex levels.</li> </ul> <p><b>Specific to socialist feminism</b></p> <p>Design objects that perpetuate and enable an economic system that controls or exploits women</p> <ul style="list-style-type: none"> <li>Several texts challenge the assumptions and motivations behind certain design objects. For example, Graves was critical of women's domestic responsibilities and related domestic products like washing machines (1996). In her view, these kinds of products are based on a social and economic assumption that women's household labour is free (Graves, 1996).</li> </ul> |
|                  | <b>Recommendations</b>   |

|                        |  |
|------------------------|--|
|                        | <p>understand user’s needs and possibly involve users in the design process (Hansson &amp; Jahnke, 2009).</p> <p>Pay attention to and support individual users, focusing on their personal needs at many levels</p> <ul style="list-style-type: none"> <li>• Most of the co-design projects focused on empowering the individual user, with the view that these empowered individuals could eventually effect larger change.</li> </ul> <p>Produce feminist technology, which conforms to and helps further feminist politics</p> <ul style="list-style-type: none"> <li>• This argument is seen throughout the <i>Feminist Technology</i> anthology (Layne, Vostral &amp; Boyer, 2010).</li> </ul> <p>Create complex objects that operate at many levels and hold a range of meanings including a support for pleasure, fun and happiness</p> <ul style="list-style-type: none"> <li>• In one of the co-design projects, the participants saw the problem and need at a physical and emotional level and addressed it through the product’s physical characteristics, symbolism and aesthetic including its feeling and look.</li> </ul> <p>Create user-driven and open-ended design objects</p> <ul style="list-style-type: none"> <li>• This was the subtext of several co-design projects, which is likely related to a feminist emphasis on self-determination and freedom.</li> </ul> <p>Create grass-roots and community-oriented design objects that can be implemented by the local community, draw on their existing strengths and expertise and support the local community and respond to their specific needs</p> <ul style="list-style-type: none"> <li>• Two of the co-design groups engaged at this level. It offers a new context for design activities and the implementation of design objects that breaks down power dynamics in industrial design and can help design and design objects better support society and their users.</li> </ul> |
| <b>Critiques</b>       | <b>F: Other projects</b>   |
|                        | <p>These systemic issues and broader feminist concerns are present in the range of other projects like marketing</p> <ul style="list-style-type: none"> <li>• For example, Perkins (1999) was concerned about a potential shortage of female decision-makers in these roles, which could negatively effect design decisions and the way the product is presented to the public.</li> </ul> <p>Unfair labour in projects like manufacturing or sales</p> <ul style="list-style-type: none"> <li>• This critique was especially pronounced in two co-design projects.</li> </ul>   |
| <b>Recommendations</b> | <b>L: Other projects</b>   |
|                        | <p>Feminism in industrial design doesn’t address issues in other projects like marketing, leaving an opening for initiatives in other fields</p> <ul style="list-style-type: none"> <li>• This is an observation drawn from the literature. Many texts stress the prevalence of issues in these related fields, but few suggest changes or appear to view them as an industrial design responsibility.</li> </ul> <p>Support best practices in labour</p> <ul style="list-style-type: none"> <li>• The co-design projects demonstrated that feminism engages with labour in the project of production. The feminist perspective in each co-design project was attentive to the people involved in producing the design object.</li> </ul> <p>Create good jobs through the production and execution of the design solution</p> <ul style="list-style-type: none"> <li>• This was the point of focus of two co-design groups.</li> </ul> <p>Acknowledge and embrace women’s agency and power where users can interpret and employ design objects in their own ways</p> <ul style="list-style-type: none"> <li>• As an example, Vostral and McDonagh challenged the vision of women as passive consumers and suggested thinking of users as smart and engaged, possibly with insights to offer to design (2010).</li> </ul> <p>Support user-driven design and design processes like 3D printing</p> <ul style="list-style-type: none"> <li>• For example, Rawsthorn explained that new technologies like 3D printing empower users, allowing them to become designers and create products appropriate to them and, notably, to their gender identity (2014).</li> </ul>   |

## 6 Discussion

These critiques and recommendations are valuable to industrial design and offer a range of potential contributions. At a broad and general level, they introduce an alternative perspective to industrial design, which can help the field move forward and adapt to changing realities and imperatives. The specific critiques and recommendations can be broadly applied. They can pinpoint problems within the field that ought to be avoided and can guide alternative practices. These changes would help industrial design align with feminism and its social goals and would enhance social responsibility in the field.

The critiques and recommendations could also inform sub-fields and specialty areas within industrial design like design for sustainability, co-design, and critical design. Certain critiques and recommendations could contribute to and even enhance their respective theory and practices. As an example, several recommendations inform the group dynamic in co-design projects. Given feminism's points of emphasis, these recommendations could be applied to encourage a relatively equal and, likely, empowering dynamic.

This illustration of the value and contributions of a feminist perspective in industrial design could also propel future changes inside and outside the field. Beyond informing various tips and tricks for industrial design, they could encourage the application of a feminist lens in design research and practice that could inherently offer these same contributions.

Finally, these critiques and recommendations could also offer broader social value by contributing to the feminist cause. Changes within industrial design would complement the feminist work already being done in the public sphere and in many other professional fields.

Though, these results must be understood as generalizations across different feminist perspectives. They are also anchored in the research context and my treatment of feminism and industrial design. Future projects from different contexts or with a more targeted focus toward feminism or industrial design could provide different results.

## 7 Conclusion

This research paper drew on a literature analysis of the existing feminist work in industrial design and project-grounded research based on co-design projects with feminist participants to identify a list of feminism's critiques and proposals toward industrial design. These outcomes offer a range of potential contributions to industrial design theory and practice and, more broadly, social justice and the feminist cause. Hopefully this paper will be helpful to the feminist design community through its meta-analysis and by providing a tentative map of feminism's intersections and interplay with industrial design. However, I also hope that it will speak to the broader design research and practice community and that they will consider applying some feminist suggestions to industrial design in their work.

## 8 References

- Amon, A. (1999). The domestication of space-age technologies. In J. Rothschild (Ed.), *Design and feminism: Re-visioning spaces, places, and everyday things* (pp. 125-129). New Brunswick, NJ: Rutgers University Press.
- Attfield, J. (1989). Introduction. In J. Attfield and P. Kirkham (Eds.), *A view from the interior: Feminism, women and design* (pp. 1-3). London: The Women's Press.
- Bem, S. L. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology, 42*(2), 155-163.
- Boutinet, J.-P. (2012). *Anthropologie du projet* (2 ed.). Paris: PUF.
- Bronet, F., & Layne, L. L. (2010). Teaching feminist technology design. In L. L. Layne, S. L. Vostral & K. Boyer (Eds.), *Feminist technology* (pp. 179-196). Urbana, IL: University of Illinois Press.
- Buckley, C. (1986). Made in patriarchy: Toward a feminist analysis of women and design. *Design Issues, 3*(2), 3-14.

- Clegg, S., & Mayfield, W. (1999). How women's place in design is still defined by gender. *Design Issues*, 15(3), 3-16.
- Clegg, S., Mayfield, W., & Trayhurn, D. (1999). Disciplinary discourses: A case study of information technology and design courses. *Gender and Education*, 11(1), 43-55.
- Cole, N. L., & Dahl Crossley, A. (2009). On feminism in the age of consumption. *Consumers, Commodities & Consumption*, 11(1), 1-5.
- Ehrnberger, K., Räsänen, M., & Ilstedt, S. (2012). Visualising gender norms in design: Meet the mega hurricane mixer and the drill dolphia. *International Journal of Design*, 6(3), 85-98.
- Findeli, A. (2004). *La recherche-projet: Une méthode pour la recherche en design*. Paper presented at the Swiss Design Network, Basel. Retrieved from <http://projet.unimes.fr/files/2014/04/Findeli.2005.Recherche-projet.pdf>
- Findeli, A., & Bousbaci, R. (2005). The eclipse of the object in design project theories. *Design Journal*, 8(3), 35-49.
- Freeden, M. (2003). *Ideology: A very short introduction*. Oxford: Oxford University Press.
- Freeden, M. (2013). The morphological analysis of ideology. In M. Freedden, L. Tower Sargent, & M. Stears (Eds.), *The Oxford handbook of political ideologies* (pp. 115-137). Oxford, UK: Oxford University Press.
- Gamble, S. (2006). Postfeminism. In S. Gamble (Ed.), *The Routledge companion to feminism and postfeminism* (pp.36-45). London: Routledge.
- Goodwin, B. (2007). *Using political ideas*. Chichester, UK: John Wiley & Sons.
- Graves, J. (1996). The washing machine: 'Mother is not herself today'. In P. Kirkham (Ed.), *The gendered object* (pp. 30-42). Manchester, UK: Manchester University Press.
- Hansson, L., & Jahnke, H. (2009). *Gender bending through design- an account of a student project on gender*. Paper presented at Nordes 2009- Engaging Artefacts, Oslo, Norway. Paper retrieved from <http://www.nordes.org/opj/index.php/n13/issue/view/9>
- Haraway, D. (1988). Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist studies*, 14(3), 575-599.
- Hedrán, J. 2009. Shaping sustainability: Is there unreleased potential in utopian thought?. *Futures*, 41(4), 220-225.
- Hesse-Biber, S. (2007). Feminist research: Exploring the interconnections of epistemology, methodology and method. In S. Hesse-Biber (Ed.), *Handbook for feminist research: Theory and praxis* (pp. 1-26). Thousand Oaks, CA: Sage.
- Hill, E. (2015). Feminism is over, the battle is won. Time to move on. *The Spectator*. Retrieved from <https://www.spectator.co.uk/2015/10/the-decline-of-feminism/>
- Lawson, B., & Dorst, K. (2009). *Design expertise*. New York: Routledge.
- Layne, L., Vostral, S. L., & Boyer, K. (Eds.). (2010). *Feminist technology*. Urbana, IL: University of Illinois Press.
- Lindner, E. (2014). 16 celebs who aren't afraid to call themselves feminists. *MTV News*. Retrieved from <http://www.mtv.com/news/1822259/celebrity-feminists-pharrell/>
- Lockyer, J. P. (2007). *Sustainability and utopianism: An ethnography of cultural critique in contemporary international communities* (Unpublished doctoral dissertation). University of Georgia, Athens.
- Marchbank, J., & Letherby, G. (Eds.). (2007). *Introduction to gender: Social science perspectives*. Harlow, UK: Pearson Longman.
- Martínez, J. G. (2007). Women only: Design events restricted to female designers during the 1990s. *Design Issues*, 23(2), 17-30.
- McCann, C.R., & Kim, S.-K. (Eds.). (2010). *Feminist theory reader: Local and global perspectives* (2 ed.). New York: Routledge.
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco: Jossey-Bass.
- Mills, A. D., Durepos, G., & Wiebe, E. (2010). *Encyclopedia of case study research*. Thousand Oaks, CA: SAGE.
- Mumby, Z. (1989). Representations of women and race in the Lancashire cotton trade. In J. Attfield & P. Kirkham (Eds.), *A view from the interior: Feminism, women and design* (pp. 20-28). London: The Women's Press.
- Obama, B. (2016). *Glamour* exclusive: President Barack Obama says, "this is what a feminist looks like." *Glamour*. Retrieved from <https://www.glamour.com/story/glamour-exclusive-president-barack-obama-says-this-is-what-a-feminist-looks-like>
- Office of the Prime Minister. (n.d.). *Justin Trudeau*. Retrieved from <https://pm.gc.ca/eng/prime-minister-justin-trudeau>
- Perkins, N. (1999). Women designer: making differences. In J. Rothschild (Ed.), *Design and feminism: Re-visioning spaces, places, and everyday things* (pp. 120-125). New Brunswick, NJ: Rutgers University Press.

- Prado de O. Martins, L. (2014). Privilege and oppression: Towards a feminist speculative design. In Y.-K. Lim, K. Niedderer, J. Redström, E. Stolterman, & A. Valtonen (Eds.), *Proceedings of DRS 2014: Design's big debates*, (pp. 980-990). Retrieved from <http://www.drs2014.org/en/publications/>
- Rawsthorn, A. (2014, December 16). By design: is the design world still a boy's club? [Web log post]. Retrieved from <https://frieze.com/article/design-7>
- Rothschild, J. (1995). 'Designing technology' to meet human needs: Feminist visions in practice. *Icon*, 1, 99-105.
- Rothschild, J. (1999). Introduction: re-visioning design agendas. In J. Rothschild (Ed.), *Design and feminism: re-visioning spaces, places, and everyday things* (pp. 1-6). New Brunswick, NJ: Rutgers University Press.
- Sargent, L.T. (2013). Ideology and utopia. In M. Freeden, L. T. Sargent, & M. Stears (Eds.), *The Oxford handbook of political ideologies* (pp. 439-451). Oxford, UK: Oxford University Press.
- Schwandt, T.A. (2007). *The SAGE dictionary of qualitative inquiry*. Thousand Oaks, CA: SAGE.
- Sparke, P. (1995). *As long as it's pink*. London: Pandora.
- Tally, R. T. (2013) *Utopia in the age of globalization: Space, representation and the world-system*. New York: Palmgrave Macmillan.
- Van Dijk, T. A. (1998). *Ideology: A multidisciplinary approach*. London: Sage.
- Vial, S. (2014). De la spécificité du projet en design: Une démonstration. *Communication & Organisation*, 2, 17-32.
- Vostral, S., & McDonagh, D. (2010). How to add feminist approaches into design courses. *Design Principles and Practices: An International Journal*, 4(4), 113-128.
- Walby, S. (2011). *The future of feminism*. Cambridge, UK: Polity.
- Wilshire, D. (1989). The uses of myth, image and the female body in re-visioning knowledge. In A. M. Jagger, & S. R. Bordo (Eds.), *Gender/body/knowledge: Feminist reconstructions of being and knowing* (92-114). New Brunswick, NJ: Rutgers University Press.

#### About the Authors:

**Isabel Prochner** is a PhD candidate at the Université de Montréal. Her doctoral research explores how a feminist perspective can inform industrial design for sustainability. Her other research and practice explores social consciousness and community in relation to design.

**Anne Marchand** is trained as an industrial designer and holds a PhD in environmental design from the University of Calgary. Her research focuses on cultural consumption as a new manifestation of responsible consumption, and on the valuation of heritage.