

THE FIRST STEP OF THE PROJECT FOR THE INTERACTION OF AN OPEN DATA PLATFORM WITH AN INTERSECTIONAL FEMINIST LENS

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ABSTRACT. The Feminist HCI is characterized as the integration of feminist theory into HCI practice, which can occur at all stages of the design process, including user research, prototyping and evaluation. However, there is still a research gap on the integration of feminism with established HCI methods. An HCI methodology that is also concerned with human values and the possible consequences of technological artifacts is Value Sensitive Design (DSV). The present work seeks to answer how to include Feminism HCI in the HCI Project with the VSD. This research took place in the context of ELLAS Project, an Open Data platform that aims to contribute to the reduction of the gender difference in STEM in Brazil, Peru and Bolivia.

KEYWORDS: human-computer interaction / feminism / value sensitive design / ELLAS / STEM

PRIMER PASO EN EL PROYECTO PARA LA INTERACCIÓN DE UNA PLATAFORMA DE DATOS ABIERTOS CON LA LENTE FEMINISTA INTERSECCIONAL

RESUMEN. La HCI feminista se caracteriza por la integración de la teoría feminista en la práctica de la HCI, lo que puede ocurrir en todas las etapas del proceso de diseño, incluyendo la investigación del usuario, la creación de prototipos y la evaluación. Sin embargo, todavía existe un vacío en la investigación sobre la integración del feminismo con los métodos establecidos de la HCI. Una metodología de la HCI que también se ocupa de los valores humanos y de las posibles consecuencias de los artefactos tecnológicos es el Diseño Sensible a los Valores (DSV). El presente trabajo pretende dar respuesta a cómo incluir el Feminismo HCI en el Proyecto HCI con el DSV. Esta investigación tuvo lugar en el contexto del Proyecto ELLAS, una plataforma de Datos Abiertos que tiene como objetivo contribuir a la reducción de la diferencia de género en STEM en Brasil, Perú y Bolivia.

PALABRAS CLAVE: interacción humano-computadora / feminismo / diseño sensible a los valores / ELLAS / STEM

O PRIMEIRO PASSO DO PROJETO PARA A INTERAÇÃO DE UMA PLATAFORMA DE DADOS ABERTOS COM UMA PERSPECTIVA FEMINISTA INTERSECCIONAL

RESUMO. A HCI feminista caracteriza-se pela integração da teoria feminista na prática da HCI, o que pode ocorrer em todas as etapas do processo de design, incluindo a pesquisa do usuário, a criação de protótipos e a avaliação. No entanto, ainda existe uma lacuna na pesquisa sobre a integração do feminismo com os métodos estabelecidos da HCI. Uma metodologia da HCI que também aborda os valores humanos e as possíveis consequências dos artefatos tecnológicos é o Design Sensível a Valores (DSV). O presente trabalho visa responder a como incluir o Feminismo HCI no Projeto HCI com o DSV. Esta pesquisa ocorreu no contexto do Projeto ELLAS, uma plataforma de Dados Abertos que tem como objetivo contribuir para a redução da diferença de gênero em STEM no Brasil, Peru e Bolívia.

PALAVRAS-CHAVE: interação pessoa-computador/ feminismo / design sensível a valores / ELLAS / STEM

1. INTRODUCTION

Human-Computer Interaction (HCI) represents a multidisciplinary field that has been rapidly growing and explores how we can design digital technologies to better meet the needs of users. In response to these needs, the HCI field has turned to a wide range of cultural theories. A recent example of this trend is the notion of “Feminist HCI,” which is characterized by the integration of feminist theory with HCI practice (Bardzell and Bardzell, 2011).

Due to the ubiquitous nature of communication technologies, how we design, understand, and evaluate design practices is one of the most important frontiers in contemporary feminist discourse (Bellini et al., 2022). It is believed that the term “Feminist HCI” began with Shaowen Bardzell’s 2010 article titled “Feminist HCI: Taking Stock and Outlining an Agenda for Design,” which outlined the design and evaluation of interactive computational systems from a feminist perspective, drawing on central commitments of feminism such as agency, empowerment, identity, equity, social justice, and more. However, even though researchers have argued for over a decade that feminist-related concepts are a powerful lens for HCI research and practice, research in this line is still marginalized (Bellini et al., 2022). As a result, the study of the direct impact of gender effects on software under construction is much more recent and has only recently been recognized as important (Ashcroft, 2022).

Furthermore, although Bardzell took a significant step in defining the 6 qualities of Feminist HCI in her study, this framework does not provide guidance on how to evaluate and prototype using these qualities and has been rarely used in practice, showing potential for improving conceptual accuracy in future research and design outcomes (Chivukula and Gray, 2020). Works that have attempted to apply the framework have used different HCI methods for this purpose, such as interviews at the evaluation stage and participatory design in prototyping, and as a result, they often address only a subset of the feminist qualities (Costanzi et al., 2022; D’Ignazio et al., 2016; Fiesler et al., 2016). Therefore, there is a scarcity of research on this topic and a gap in research on its application of feminist qualities using a consolidated methodology.

A Human-Computer Interaction (HCI) methodology centered on human values and the potential consequences of technological artifacts is Value-Sensitive Design (VSD). VSD emerged in the 1990s when it was identified that, in developing new technologies, the predominant focus of developers was the functionality of the application, primarily concerned with usability, reliability, etc. (Oliveira and Ishitani, 2022). This critique is also raised by Feminist HCI, which considers the focus on objectifying usability, as it is more concentrated on time and errors in task performance than on agency, personal goals, and the individual’s life vision (Bardzell, 2010).

A The main purpose of VSD is to influence technology design so that it explicitly addresses certain human values that are taken into consideration and integrated

throughout the design process. This concern for stakeholders, their real needs, and how they will be affected by the artifact is a point of convergence between VSD and Feminist HCI. Both Feminist HCI and VSD are concerned with how computational technology affects people and society. Furthermore, some values directly support certain feminist qualities, such as the Sustainability value supporting Ecology (Bardzell, 2010). Additionally, the tripartite and iterative nature of VSD, along with the diversity of methods available for the three investigations, can enable the implementation of the six feminist qualities in a single project. This makes VSD a potential candidate as a consolidated methodology for the application of the feminist approach in HCI in its entirety.

The aim of this study is to investigate how the concepts and principles of Feminist HCI and the VSD approach can be integrated. Therefore, we pose the following research question: How to apply Feminist HCI using VSD?

In order to take the first step in answering this question, this study proposes a process that combines VSD with Bardzell's 6 feminist qualities in the value selection stage. An Open Data¹ platform will be used as an example, aiming to contribute to the generation of comparable data between Latin American countries (Brazil, Peru, and Bolivia) on gender differences in STEM (Science, Technology, Engineering, Mathematics) fields, integrating primary and secondary data on women's careers in these areas and in leadership positions.

2. THE PROPOSED PROCESS

DSV is "a theoretically grounded approach to technology design that comprehensively and principled considers human values throughout the design process" (Friedman et al., 2013). It involves the creation of an artifact or design through iterations that integrate conceptual, empirical, and technical investigations, making it a tripartite methodology (Friedman et al., 2013).

The first investigation is the conceptual one, which involves an analysis informed by the philosophy and sociology of value constructions relevant to the design in question. The second investigation is empirical, focusing on quantitative and qualitative measurements to evaluate the design from both technical and human values perspectives. The third and final investigation is technical, aiming to understand how an existing technological artifact positively or negatively affects a human value and how the values identified in the conceptual investigation can be better supported by different design possibilities for the artifact in question (Friedman et al., 2013). In this article, we will focus on the conceptual investigation and how to incorporate Feminist HCI into it.

1 Em português: Dados Abertos

The article “Value pie: a culturally informed conceptual scheme for understanding values in design” (Pereira and Baranauskas, 2014) outlines a series of steps for incorporating the lens of values into a conceptual investigation for technology development. The first step involves choosing a value to be discussed that is significant for the design context. How could we choose such a value while incorporating Feminist HCI?

As mentioned earlier, some values are related to some of the 6 feminist qualities. Through this relationship, the qualities could be incorporated into the DSV. This work would not be the first to relate DSV values to other concepts (Pereira et al., 2013). The Value Pie² (VP) itself organizes values according to their formality and cultural areas, based on Organization Semiotics and Culture Building Blocks (Pereira et al., 2013).

We propose a very simple process to take advantage of this relationship in the value selection step:

1. Define one of Bardzell’s 6 feminist qualities as central to the technology to be developed;
2. Conceptually relate the values to Bardzell’s 6 qualities, considering the design context (Bardzell, 2010);
3. Define a value related to the quality chosen in step 1 to guide the design process;

3. PRACTICAL EXAMPLE

To illustrate how the proposed process could be applied, we will use the ELLAS Platform as a study object, a platform still in development. However, for comparison purposes, first, we will choose a value related to the platform’s objectives following the normal application of DSV.

The open data platform to be created by the ELLAS³ (Maciel et al., 2023) project aims to: (1) “promote the use of open data on women in STEM leadership to raise public awareness of gender issues in the field,” and (2) “provide recommendations for policymakers in Latin America to increase the number of women in STEM careers.” The project aims to concentrate and structure data on women’s careers in STEM through the ELLAS Platform to enhance the efficiency of developing new policies and initiatives on the subject (Berardi et al., 2023).

When we visit the VP, despite several values being related to the platform, there is a strong connection with the value of Sharing. After all, it is a platform that aims to share data and recommendations. While choosing a value is only the first step in using the VP, in this article, we are focusing on how to include Feminist HCI in this stage, so we will stop here and move on to the example.

² Em português: Torta de Valores

³ <https://ellas.ufmt.br/>

The first step of our proposed process is to choose one of the 6 feminist qualities of HCI that is relevant to the ELLAS Platform. The qualities are:

1. Pluralism, which means understanding that people are diverse and plural, therefore requiring a design that takes this diversity into account;
2. Participation, which involves the inclusion of people (plural) in the prototyping and evaluation process of HCI;
3. Advocacy, which relates to an HCI stance that seeks to build a better society for all people;
4. Ecology, i.e., concern for the effects and impacts that technology can have on the individual and collective context;
5. Embodiment, which here means understanding people as a whole, including aspects of the physical body, emotions, ethnicity, sexuality, etc.; and
6. Self-definition, i.e., giving the user the opportunity to define themselves to the software, rather than the software shaping them.

While all 6 feminist qualities of HCI need to be included at some point in the design process, in step 1, we chose Advocacy as the starting point for our conceptual investigation because the objectives of the ELLAS Platform aim to build an egalitarian society, and consequently, a better one for all.

There are various ways to choose a value, such as selecting it from the previously mentioned Value Pie (VP), a culturally informed conceptual scheme proposed to organize 28 identified values in the context of social software (Pereira et al., 2013). Another way to choose a value is to recognize it in the list of 13 human values with ethical importance frequently involved in system design projects, as created by Friedman to suggest values that could be considered during the investigation (Friedman et al., 2013).

Table 1
Relationship between Bardzell's qualities and Friedman's values

Bardzell (2010)	Friedman et al. (2013)
Pluralism	Universal usability
Participation	-
Ecology	Sustainability; Privacy; Informed Consent; Accountability; Trust
Embodiment	Identity; Calmness; Well-being; Courtesy; Ownership; Unbiased
Self-definition	Autonomy
Advocacy	-

Table 2*Relationship between Bardzell's qualities and VP values*

Bardzell (2010)	Pereira et al. (2013)
Pluralismo	Accessibility; Adaptability; Usability; Portability; Aesthetics
Participation	Cooperation; Conversation; Sharing; Awareness/ Perception
Ecology	Security; Privacy; Consent; Norms; Trust
Embodiment	Identity; Emotion/Affection; Relationships; Pres- ence; Groups; Objects; Ownership; Reputation; Visibility
Self-definition	Autonomy
Advocacy	-

For a broader range of values, we chose to use these two sources as references. The second step in our proposed process is to relate these values to feminist qualities while considering the design context. Tables 1 and 2 illustrate this.

This connection between values and feminist qualities cannot be considered unique or definitive. The same value can support different qualities in different design contexts or even in the same context, depending on who is making that connection. For example, the quality Pluralism was supported by the value Accessibility because the ELLAS Platform should be accessible to all individuals, no matter how diverse and plural they may be. However, in the context of a screen reader for visually impaired individuals, Accessibility would support Advocacy, as it is a system that, through the promotion of Accessibility, seeks to empower people with disabilities.

In other cases, the same value can be linked to more than one quality, such as Adaptability, which we consider as supporting Pluralism, based on the principle that the designed system should adapt to the diverse people who will use it. An example of this adaptability on the platform would be changing the language based on the user's country of origin. However, the value of adaptability can also support Autonomy. An example of adaptability as Autonomy would be displaying the most visited data types on the platform's home screen. Since this feature has not been included in the platform project so far, we related adaptability to Pluralism. Therefore, it's essential to view Tables 1 and 2 simply as an example of how values and feminist qualities can be related to help participants in future studies make their own connections.

As you can see in Tables 1 and 2, the quality of Advocacy did not encompass any of the values mentioned in the two works used as references. Therefore, for step 3, we chose a value that was not present in either of the two instruments. This is possible because they do not constitute a definitive list of values (Pereira et al. 2013). Among all the values implied in the ELLAS Platform, we chose Activism. The concept of Activism

does not have a single, consensus definition, and its meaning for this research will be “the activity of working to achieve political or social changes, especially as a member of an organization with specific objectives” (Oxford Advanced Learner’s Dictionary, 2023). In other words, the ELLAS project (an organization with specific objectives) will concentrate and structure data on women’s careers in STEM in an Open Data Platform (an activity of working) to increase the efficiency of developing new policies and initiatives on the subject, especially increasing the number of women leaders in universities, industries, and public institutions (to achieve political or social changes).

Therefore, the choice of the value Activism, along with the quality Advocacy, as a guide for conceptual research becomes interesting because it is a value closely related to the project’s objectives. The next steps involve continuing with the conceptual research, following the remaining steps for using the VP.

4. CONCLUSIONS

The present study took the first step towards the development of the ELLAS platform, integrating Bardzell’s feminist qualities with DSV. A process was proposed to assist in choosing a value influenced by Feminist HCI. The ELLAS platform was used as an example, and the results show that the chosen value changed when the process was applied. However, this work provided only a demonstration, and this process should be applied more times and in different contexts to be refined.

In addition to the potential influence that the proposed process demonstrates in defining a value, it is believed that it can bring other benefits. When the VP was created, the authors sought to balance the granularity of values so that they were diverse and understandable without becoming too complex or detailed (Pereira et al., 2013). We understand that feminist qualities are complex to work with because they encompass many concepts within them, and perhaps that’s why it’s common to work with only part of them. Therefore, breaking them down into concepts of lower granularity, the values, may facilitate the feminist prototyping and evaluation process.

The next step after choosing this value is to use it to conduct a conceptual investigation, following the remaining steps for using the VP. This investigation will form the basis for the empirical and technical investigations of the DSV, with a focus on including the other 5 feminist qualities in these further investigations. In future work, we will refine the distribution of values across Bardzell’s 6 feminist qualities by inviting stakeholders from the ELLAS Platform to make their own connections and bring in new values that are important for the platform’s development.

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