Article

The Women* Who Made It: Experiences from Being a Woman* at a Maker Festival

Nathalia Campreguer França [1], Dorothé Smit [1,*], Stefanie Wuschitz [2] and Verena Fuchsberger [1]

[1] Center for Human-Computer Interaction, University of Salzburg, 5020 Salzburg, Austria; nathalia.campreguer@plus.ac.at (N.C.F.); verena.fuchsberger@plus.ac.at (V.F.)
[2] Institut für Philosophie, Literatur-, Wissenschafts- und Technikgeschichte, Technische Universität Berlin, 10623 Berlin, Germany; wuschitz@tu-berlin.de
[*] Correspondence: dorothe.smit@plus.ac.at

Abstract: This paper examines the profile of 10 women* makers attending Schmiede, a 10-day maker festival, which is unique not least due to its almost equal gender distribution. Drawing on interviews with women* attendees, we describe general struggles in fitting in the culture of spaces for making, the role of mentorship in childhood and adulthood, motivations and different approaches for engaging in making, limiting factors in (art-)making, and the consequences of sexism for making practice. We then discuss the characteristics of these women* makers in relation to existing literature about the culture in maker spaces and festivals and conclude by highlighting characteristics of the observed festival that may have resulted in more inclusive access for women* and other underrepresented groups.

Keywords: makerspaces; maker culture; gender

1. Introduction

Over the last few decades, making and hacking have become more popular, and numerous spaces to engage in making have emerged across the globe. Aside from permanent makerspaces, which host tools and machinery that makers can use for their projects, a great number of festivals, conventions, and community gatherings have appeared. These more temporal spaces centred around the theme of (technological) making and providing opportunities for creating, hacking, and networking together. Nevertheless, it has been well-documented that participation in makerspaces, as well as many hackathons, game jams and maker festivals is largely male (e.g., [1–3]).

The exclusion of women* (The gender asterisk is intended to make clear that "being a woman" or "being a man" is not an essential quality. By adding the asterisk, the term aims to acknowledge and include all people who identify as queer, non-binary, transgender or intersex.), trans people, non-binary people, and queer folks from these spaces lead to disadvantages, not only causing a direct impact on making practices (e.g., based on lack of access to machinery and tools) but also on a societal level, as access to making often leads to a multitude of opportunities, including the acquisition of new competencies, participation in technological innovation, expansion of professional and personal networks, and engagement with public discourse [4–6]. To address the gender imbalance in access to (technological) making, therefore, is to address larger issues of societal inequity. In this paper, we aim to unpack some of the underlying structures that contribute to unequal access to making and maker communities.

Beyond simply increasing the number of women* taking part in technological making practices, with this research, we intend to contribute to the identification of measures that support meaningful participation of women* and other underrepresented groups in these spaces. While much research has been done in the past decade into the circumstances and characteristics of makerspaces with overwhelming male presence (see, e.g., [7–14]), as

well as feminist and women*-only makerspaces (see, e.g., [15–19]), less research has been done in spaces that have achieved a proportional gender balance, and the reasons behind this balance.

Our research objective is therefore to explore the characteristics and profiles of the women* who participated in a maker festival that has an unusually equal gender balance, as well as the characteristics of the festival itself. We employed a method of semi-structured interviews with ten women* participants at this maker festival. The interviews were designed to question the participants' roads to success in their making practices, and failures that may have happened along the way. Furthermore, we aimed to review together with the participants the characteristics of this particular maker festival, and how it has created an accessible space for them to participate in technological making, but also how this maker festival still falls short.

We applied a constructivist grounded theory approach [20]. By means of affinity diagramming [21], we analysed the notes taken during the interviews and developed five overarching themes. These themes are presented in the findings section, and relate to the motivations of women* makers to make, the factors that limit them, the consequences of sexism and the patriarchy on these motivations and factors, the role of mentors, and the need for space. We then discuss these findings in relation to existing literature and characteristics of these women* makers and the culture in spaces for making more broadly, and conclude by foregrounding aspects of the organization and community of the observed festival.

1.1. Theoretical Framing

In the next sections, we introduce the maker movement and the places where maker communities reside. Further, we discuss the reasons for exclusion and inequity in making communities and makerspaces, and the adverse effects this has on women* and society in general.

1.1.1. Making

Interest in making, specifically in the context of the maker movement, has steadily been increasing over the past two decades. For example, in 2006, the first Maker Faire was organized in the US [22]. In 2020, there were 40 sister events (and another 170 independently organized Mini Maker Faire events) [23]. Dale Dougherty, the founder of Make Magazine, notes: "The maker movement has come about in part because of peoples' need to engage passionately with objects in ways that make them more than just consumers." [22] (p. 2). The definition of who and what can be considered part of the maker community is intentionally broad, to accommodate all with the desire to be a "creator of things" [24]. The Maker Movement is primarily practice oriented [25], with commercialization often being secondary to the creation aspect of making practices.

1.1.2. Temporary Maker Communities: Hackathons, Game Jams & Maker Festivals

Many makers are part of communities [25,26] in which they collaborate, learn from each other, and share their work. These communities are often connected to locations that mostly can be categorized as either permanent or temporary. Amongst permanent spaces for maker communities, we consider, e.g., fab labs, hackerspaces, and makerspaces. While there are differences between these types of spaces (cf. [27,28]), the discussion thereof is beyond the scope of this paper.

Amongst temporary spaces for maker communities, we consider, e.g., hackathons, game jams, and maker festivals. Hackathons are events that usually last between 24 and 48 h and are specifically focused on solving a problem within this time span—usually with a heavy focus on programming [3]. Game jams are similar types of events, but with a focus on the creation and development of games [2], therefore also concentrating on activities such as graphic design, sound design and storytelling. A maker festival is an event that can

take one or more days, with a main focus on displaying and sharing work, and networking and connecting with other makers—an example of this type of event are Maker Faires [22].

The event at which the data collection took place has characteristics of a hackathon and game jam, as a large focus of the event is on the creation of (technological) projects within a specific context. However, the duration of the event (ten days) sets it apart from other hackathons, which usually last between 24 and 48 h. The event also shares many characteristics with maker festivals, as networking and sharing play a major aspect of the event. Although the event which we describe in this paper does not neatly fit either of these definitions, we will henceforth refer to it as a "maker festival", while noting that during this event, making, hacking, and creating also play a large role.

Different locations, temporalities and formats aside, there is one thing that many of these spaces and events have in common: the participants are overwhelmingly male [1–3,7,29–31].

1.1.3. Exclusion from Making

Technological making, crafting and hacking has been shown numerous times to provide advantages on multiple levels to those who engage in it. From the obvious improvement of technological skills [32], and the confidence that is experienced when realizing one's own ideas [33], to a societal level, where participation in (technological) making paves the way for participation in public discourse [34,35] and industrial innovation [36]: those who are excluded from making and spaces where making happens, are disadvantaged on many levels.

There are different terms used for spaces where making happens, and each term denotes a (slightly) different approach to making, hacking, and community [37]. For the purposes of this paper, we refer to fixed locations where (prospective) makers can use resources needed for making and hacking (e.g., electronics workshops, power tools, laser cutters, 3D printers and more) as makerspaces. These makerspaces are places that encourage collaborative learning and knowledge sharing [8], and though makerspaces aim to reduce access barriers to any (prospective) maker, this access is often (very) unbalanced [38]: participants in makerspaces are generally young, white men* with a higher education background [1,7,8].

Several reasons for this discrepancy can be discerned. First, women* are often undercounted as makers for the type of making they do [29], which are often more strongly craft- or art-based, rather than technology-based. Being discounted—or not taken seriously—results in women* feeling less welcome in makerspaces [16]. Even if women* wanted to visit makerspaces, they have less time to do so: women* spend, on average, two to four hours more than their male counterparts per day on unpaid work, such as child care, household tasks, elder care and organizational tasks [39] [p. 137]—valuable time that cannot be spent on crafting and making. Furthermore, women* tend to avoid makerspaces dominated by men* [7], because, for example, men* often interpret different working styles that women* might display (such as sketching and thinking) as a sign that they need help, when this is not the case [30]. Furthermore, the chaotic, disorganized and unhygienic state of many (male-dominated) makerspaces is another trait that can make these spaces less welcoming and usable for women* [7].

1.1.4. Feminist Hackerspaces

The Maker Movement cannot be viewed without also discussing its political core: empowering individuals in a corporate society, and reinvigorating democracy [31]. Unsurprisingly, many women*, tired of and disillusioned with the constant unwelcome atmosphere in many makerspaces, have created their own spaces [16]. Although both physical and virtual feminist hacker initiatives have existed for a long time, permanent feminist hackerspaces are a relatively new phenomenon, which have become more prevalent over the last decade [40]. The variety and diversity of these spaces notwithstanding, they have in common that women* and other marginalized people should be welcome to engage

in technological making and hacking, without being subjected to the discrimination or abuse that they encounter in other spaces [17]. For many women, trans non-binary and queer makers, these feminist hackerspaces function as safer (than general) spaces, where common values are foregrounded and guaranteed by like-minded members [15].

1.1.5. Inclusion Efforts in Makerspaces

While feminist hackerspaces are becoming more common, efforts have also been made to increase diversity in general makerspaces. An often-used approach is to organize low-threshold workshops that often leverage so-called "women-centric" knowledge and skills [41] such as practical skills, like sewing, but also 'soft skills', like social skills [9,17,42]. Furthermore, workshops and courses specifically for girls* seem to be a successful way to safely introduce girls* to makerspaces and technological making [43]. When practical approaches have been explored in makerspaces (e.g., by producing Fab Boxes to persuade women* to visit a fab lab [42]), they often could not be implemented consistently due to high costs related to personnel or equipment requirements, even if have proven successful. One of the most successful tools to involve women* and girls* in technological making thus far is the Lilypad (https://www.sparkfun.com/lilypad_sewable_electronics, accessed on 19 August 2021) platform: an open-source microcontroller module, similar to Arduino (https://www.arduino.cc/, accessed on 19 August 2021), specifically developed for e-textiles and wearables. Research shows that while only 9% of sold Arduinos are purchased by women*, 35% of Lilypads are purchased by women* [44], making the platform a successful tool to introduce women* to technological making.

In other words, while there is evidence that inclusive access to making would have positive effects on those that are underrepresented, it remains unclear how balanced access can be facilitated, and even more so, how it can be sustainable. In order to address this gap in research, we aimed to better understand characteristics and experiences from women* makers in and beyond the scope of a makers' gathering that actually is fairly inclusive, and which we will describe in the following.

2. Material and Methods

In this section, we describe the research context and the methods of data collection. Finally, this section also includes a statement on the researchers' positionality.

2.1. Context of Data Collection

The data discussed in this paper was collected at a Schmiede (http://schmiedehallein.com/, accessed on 19 August 2021), in Hallein, Austria. Schmiede is a yearly ten-day maker festival that calls itself a "Playground of Ideas". During this festival, between 150 and 300 people gather to cooperatively hack, prototype, perform, and network. Participation in the festival is based on an application that can be submitted online. Participants pay a participation fee of €65 (equivalent US$79). In many ways, this festival is unique: in its duration, location, size, and setup. There are few maker festivals that last for ten days—most of them are shorter, often between four and seven days. Furthermore, Schmiede takes place in a small town, allowing participants to camp or stay near the venue for an affordable rate. Schmiede, unlike many hackathons and maker festivals, also does not have an overarching goal, challenge, or assignment, and while it does have a theme, the participants are free to interpret (or not interpret) this theme at will. The only fixed event at Schmiede is the "Werkschau" (Work show), and participants are strongly encouraged (but not obligated) to show the outcomes of their participation at Schmiede. For this research, however, the most notable unique characteristic of Schmiede is the gender balance among participants at the festival, which is much more proportional than many other hackathons, game jams and maker festivals. According to one of the organizers, each year nearly as many women* take part in the festival as do men*, which corresponds with the observations of the researchers participating in the festival.

2.2. Larger Research Context

The research described in this paper was executed in the context of a larger research project (http://hci.sbg.ac.at/femmad, accessed on 19 August 2021) that focuses on the gender gap in makerspaces, hackerspaces and fab labs. In this project, we are working together with several makerspaces throughout Austria to address the gender imbalance in the number of makerspace attendees, with the goal to establish best practices for makerspaces. To identify good practices for promoting inclusion of women*, we investigate the communities and spaces that have established a better balance in terms of gender representation, or representation of other, often underrepresented groups (e.g., older citizens, disabled people, or people with a migration background). We therefore came to Schmiede with research questions related to the success of the festival, but also questions specific to the participants of this festival, to determine whether there is something that sets them apart from participants in other maker communities. Our main research aims were to find out the way the interview participants got involved in making practices (e.g., is this a practice that already evolved in childhood, or something that they came to later in life), and how they accessed the Schmiede community. Additionally, we were interested in the interview participants' experiences with exclusion in the context of making, arts and crafts, and the hurdles they had to overcome or still struggle with in their endeavours. Our interest in this research context further extends to the fact that while this maker festival has a better gender balance amongst participants than most other makerspaces, when looking at other characteristics of the participants, such as age, education levels and cultural background, the festival appear to be rather homogeneous. We are therefore also looking to detect what characteristics make it more likely that someone finds access to this maker festival.

2.3. Approach and Methods

We approached this research through constructivist grounded theory [20], as all three researchers are themselves women* who practice (technological) making and crafts, and have experience with exclusion based on gender. Constructivist grounded theory allows researchers to co-construct the data with their study participants and allow space for the researchers' "perspectives, values, privileges, positions, interactions and geographical locations" [45] (p. 99). We therefore conducted semi-structured interviews with open-ended questions and related the findings with our own observations of the festival [46]. The first author of the paper participated in the festival for the first time in 2020. The second author of the paper has participated in the festival five times. The third author has not participated herself, but visited several exhibitions at the festival and has been in close contact with several participants during Schmiede and thereafter.

Doing semi-structured interviews was the most suitable method for data collection, considering the format of the festival and availability of participants. We interviewed ten participants during the 2020 festival. An overview of demographics and other information about the interview participants can be found in Table 1. The interviews took place in a semi-structured manner for a duration of between 40 and 60 min. The interviews were recorded, and the interviewer took notes while interviewing the participants. Furthermore, a second researcher listened to the interview recordings and also independently took notes summarizing the points discussed into short paragraphs. The notes were analysed following the process described in the upcoming section. At the beginning of each interview, the participants filled in a form confirming their informed consent to their participation and the analysis of the data. The interview participants also filled in a brief demographic sheet asking for age, self-described gender identity, education, occupation, and number of times attending the festival.

Table 1. The demographics of the study participants, including: age, self-described gender identity, education, occupation, and the number of times the interviewees had participated in the maker festival. All study participants resided in Central-European countries at the time of the interviews.

P#	Age	Self-Described Gender Identity	Education	Occupation	No. of Times Participated?
1	32	Female	English & American Studies	PhD Student	1
2	33	Female	University of Fine Arts	Media Artist	2
3	30	Female	Information Design	Illustrator	4
4	26	Female	Journalism and Development Studies	Documentary maker	1
5	31	Female	Theatre Science	Stage Designer	1
6	35	F	Comparative Literature	Graphic Designer	5
7	43	Female	Digital Arts	Artist/Freelancer	1
8	39	Fem	Communication Science	Founder & CEO of production company	>15
9	24	Woman	Vocational School for Sculpting	Sculptor	2
10	40	Female	Industrial Design	Artist	1

The interview guideline that was used during the interview was divided into five sections, which we will briefly describe here. The full interview guideline can be found in Appendix A. First, the interviewees were asked to introduce themselves and describe their work practices to clarify, e.g., whether they work as an artist or maker full time, or whether their making practices exist alongside an unrelated occupation. Secondly, the interviewees were asked about their experiences participating in the festival. We specifically asked how many times they had participated, how they first ended up at the festival, and whether they feel welcome at the festival. Thirdly, we broadened the topic to making and craft in general, beyond the scope of the festival, asking the interviewees to tell us about their making practices, the obstacles they experience, their approach to learning and problem-solving, and whether they consider themselves makers. The fourth section related to inclusion and community. We asked interviewees whether they were part of any other communities, beyond the festival, and whether they were supported in their endeavours by friends, family, mentors, or role models. Finally, in the fifth section, we asked the interviewees to imagine the future with us, and to tell us how they would like their making practices to evolve, and what they would need in order to do so.

A Note on COVID-19: as with all events in 2020, the 2020 maker festival was impacted by the ongoing COVID-19 pandemic. Instead of the usual 150–300 participants, that year, 80 people participated. Strict hygiene and social distancing rules were enforced. Consequently, all interviews took place in the open-air courtyard of the building, social distancing rules were observed, and both the interviewer and the interviewees wore masks for the duration of the interview.

2.4. Data Analysis

As described in the previous section, the interviewer took notes during the interviews and a second researcher took further notes afterwards while listening to the recordings. These notes were then analyzed and coded into an affinity diagram. Note-taking in combination with revisiting parts of the interview recordings during the analysis was preferred over the use of verbatim text transcripts due to its balance between reliability on data representation and time-efficiency [47]. Throughout an iterative process, the researchers clustered a total of 352 notes, which were labelled and organized as suggested by Holtzblatt, Wendell and Wood [21] (pp. 159–179). Due to the ongoing pandemic, the researchers had to complete the analysis online. For the affinity diagram, the online tool Miro (https://miro.com, accessed on 19 August 2021) was used. The researchers completed the diagram over the course of several days, during which they kept a video-conferencing call going while they worked on the placement and categorization of research notes. This

process resulted in five top level categories, the relevance and significance of which will be described in sections below. The final affinity diagram can be found in Appendix B.

2.5. Positionality Statement

Positioning this research as feminist research within the realm of Human-Computer Interaction, we find it necessary to include a positionality statement [48]. The researchers involved in this work approach research informed by multiple standpoints, contexts, and positionalities [49]. These subjective lenses on research therefore require reflexivity [50]. The interviews, of which the results are described in this paper, were conducted by the second author, a white, cis-gender woman, who has continually lived in Central and Northern Europe. The analysis was conducted by her and the first author of the paper, a Latin-American, cis-gender woman who lived most of her live in South America but has her research experience rooted in the United States and Central Europe. The third author works at the intersection of art, research and technology, with a particular focus on feminism, open source technology and peer production. The third author's contribution is limited to the visuals of the manuscript. The fourth author of the paper, whose role was to guide the research activities and embed them in the larger research project, is a cis-gender woman, who has been continually living and working in Central Europe. All three authors are researchers in the field of Human-Computer Interaction and have personal experience with exclusion from technology-related making practices based on their gender identity.

3. Results

In this section, we describe findings, which relate to specific characteristics of the women* that were interviewed, but also to experiences shared amongst the interviewees in relation to their making practices, their support systems, and encounters with maker communities exclusion and discrimination. To illustrate the richness of these findings, we have collaborated with artist, hacker, and researcher Stefanie Wuschitz, who has created visual interpretations of the findings described below.

3.1. Preconceptions of the Maker Profile

At the beginning of the interviews, we asked people if they considered themselves a maker. Almost all interviewees were reluctant in defining themselves that way. Many participants had a particular definition of 'a maker' in mind, and did not directly consider themselves makers based on that definition. Only one participant (P6) immediately agreed to the label of 'maker' to describe herself, two agree that they could fit the label because they are producing tangible work (P1, P10), and three (P2, P5, P9) think they could be called a maker but prefer to define themselves differently. We asked this question without giving any definition of what a maker should be, but the participants were already aware of the general context of the project, which is, broadly speaking, to understand and support women* in making. Most did not give an answer right away, but rather reflected about what a maker would be. They strongly associated a maker with producing tangible things. As such, interviewees working with abstract media like text or images didn't consider their work making (P4). A few participants also described an image of the maker as a techie guy, nerd, or programmer that works on projects with electronics that aim for market or economic impact (P1, P2, P5). Agreeing that in many cases they are also making physical things in the arts, and that art can indeed bring economical return, they stressed that artistic making, as opposed to "maker" making, is not driven by business interests. Such a view of who is a *maker* and what can be considered *making* contributes to what they described as an initial hesitance to join the festival. Initially, prior to joining the festival for the first time, a few participants questioned if their (mostly arts-oriented) work would fit such an environment. They felt more confident to join after attending one of the work showcase days that was opened to the public or receiving the recommendation of a friend that had already attended the festival (see Figure 1).
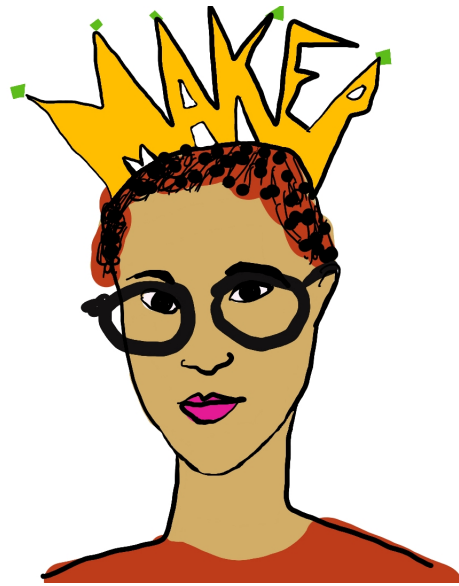
Figure 1. Not a maker, no. Visual interpretation of the findings in Section 3.1—Preconceptions of the Maker Profile. © Stefanie Wuschitz, 2021.

In contrast to the reluctance to initially define themselves as makers, throughout the interviews participants cited learning and working with a set of skills that they had previously defined as *maker* making. For example, several talked about learning how to program, working with electronics and new media, and creating physical, tangible art pieces (P2, P4, P5, P6, P8, P9, P10). Nevertheless, their interests in developing such skills seemed to always have a well-defined purpose. They valued such skills for enriching their work, but never described learning technical skills for fun, rather seeing it as a means to an end. Regarding learning new skills, they said having a strong hands-on and trial-and-error approach. They often faced failure as a part of the process and actively looked out for learning new technical skills, when they saw purpose. Most interviewees acquired technical skills through self-learning (P1, P2, P4, P5, P7, P8, P9, P10), with just one participant (P6) saying she sometimes looked for lectures with professionals. Some participants described having dubious thoughts when reaching out to prospective partners, also outside the festival, even though they highly valued collaborations and external feedback. Even when a substantial part of their job includes physical making, almost all interviewees were reluctant to define themselves as makers due to a perceived lack of technical training or economic and social relevance of the work: *I wouldn't call myself a maker out of respect for real makers and artists, who've made a job out of it* (P7, translated from German). Two participants (P1, P4) did not consider themselves makers, as *a maker is a person who creates tangible things* (P1).

The interviewees had a strong emotional connection with their work. The possibility of emotional expression through the work was an important requisite, and had a great impact on their personal and professional life. The importance of a personal connection with their work, where inspiration was described as coming from within and ideas being always with them, also had an impact on their creative process. They said that sometimes sharing work that is too personal was difficult when they didn't feel it was *complete* and *could live its own independent life* (P1). To get feedback on their projects, they preferred sharing work-in-progresses with people they know and trust, such as friends and colleagues.
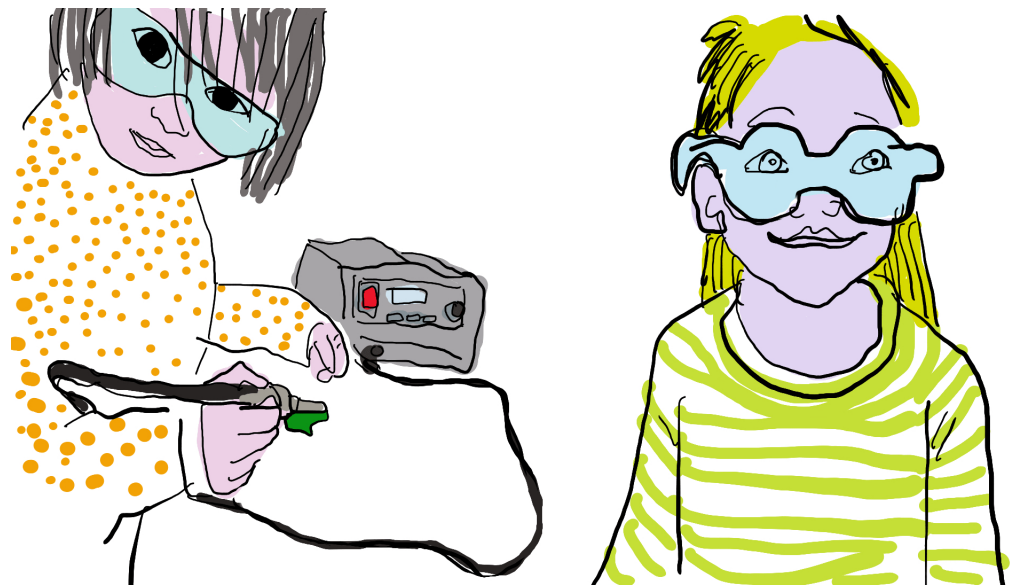
3.2. Role Models in Childhood and Adulthood

For all interviewees, mentors and role models were often people professionally or personally close to them. The type of mentor differed, nevertheless, depending on their life phase. They pointed out family members as giving inspiration to pursuing their current career path at a young age, and cited family support as an important part of the

incentive to focus on (artistic) studies in early life, reflecting on a tendency to complete higher level degrees later on. One participant (P6) explained that her grandmother being ahead of her time—being an artist and employed as a teacher even after marriage—had greatly influenced her (artistic) career choices. Some interviewees stressed the incentive to study particularly as means of pursuing a career that was unexpected in their family, for continuing with their studies, or for moving to a different city when this was not the norm in their homes. Noticing the importance of early support in a girl's awareness of possible professional paths, several interviewees (P1, P2, P10) mentioned trying to serve as role models themselves to younger women* (often family members, such as cousins and nieces) by having conversations about career and education. Several participants also emphasized the need for having more role models represented in schools through historical figures and authors, and discussions on feminist topics. Some interviewees mentioned teaching aspirations as a means to "give back" (P10) to society and provide role models for the next generations of women* makers and artists (P2).

When it comes to support in early professional and adult life, they expected mentors to be encouraging and uplifting in relation to the chosen (career) path, instead of only offering advice on the work itself. They also looked for more than just success of the work of role models, but rather the impact the person had in their field, especially if they were underrepresented in these fields. P2 stated that for her, *it is less about the technical skills [...], but more how [they] dare to take the space*. How role models deal with work-life balance and the struggles—personal, financial, or other—they might have had to achieve their success also served as inspiration for the interviewees (see Figure 2).

Figure 2. When I grow up. Visual interpretation of the findings in Section 3.2—Role Models in Childhood and Adulthood. © Stefanie Wuschitz, 2021.

3.3. The Need for a Room of One's Own

An interdisciplinary approach to art is a common characteristic among participants. Their work often combines new media and technology or science with an artistic approach. The diverse nature of their work also has an impact on aspects of their making. For example, P5, P8, P9, and P10 all mentioned the importance of deepening their work through combining theoretical foundations with physical making, often related to the artistic expression of the work. They articulated that their experiences at university had opened doors to other disciplines and provided support for the theoretical and critical side of their work. Simultaneously, P5 and P10 noticed that academia can be limiting due to a rigid structure, which restrains artistic expression, and lack of exposure to making skills related to new media and technology. In fact, several interviewees (P2, P4, P5, P7,

and P10) stated that most of their skills in new media, technology, and programming were learned outside the university setting, which created a strong dissonance between these two environments when described in the interviews.

To advance their work further, these women* took advantage of programs like shared studios (P5) and artistic residencies (P2, P8, P10) to find collaborators and expand their network, while benefiting from a motivating work structure. For the self-employed participants, events like the maker festival went beyond collaboration but provided a structure for unfinished projects, setting deadlines and establishing goals (P2). For the participants with a more traditionally-structured job, such spaces could help with stepping out of the status quo to re-fuel creativity and even take a break from routine (P1, P7, P8).

Despite being open to collaboration and different interpretations of their work, most participants sought people they knew and trusted to get feedback during their creative processes. They didn't fear failure in their practice and understood that it can be part of a learning process, and even be enriching for a professional. P3 stated: *I am not afraid to show unfinished work to others, because I am used to failing*, whereas P2 and P3 both acknowledged that (learning to deal with) failure is part of the artistic process. P1 conceded that struggles help one to learn, but additionally mentioned that *a stable career and stable income would also be nice* (see Figure 3).
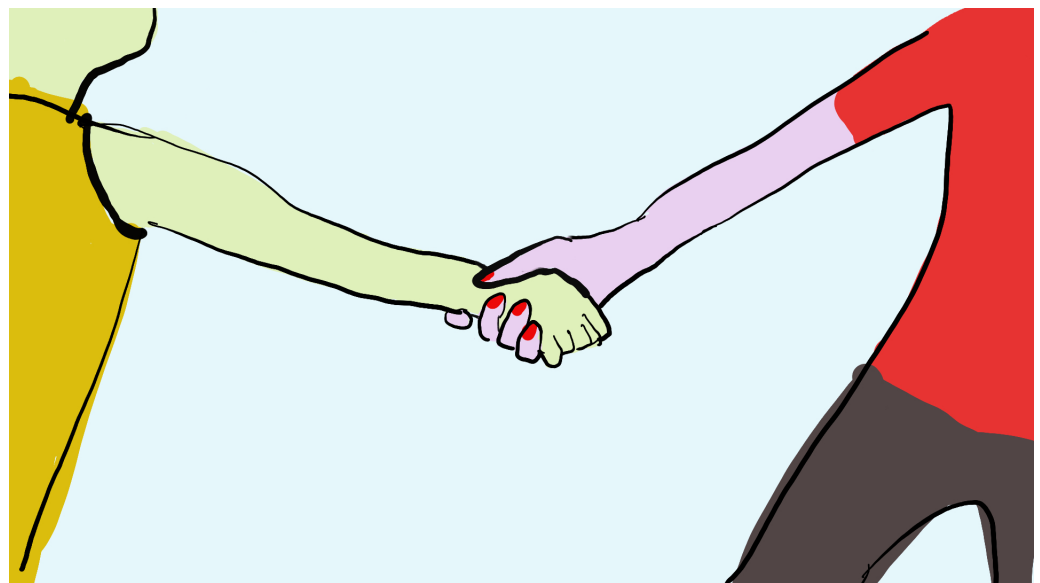

Figure 3. Room of my own. Visual interpretation of the findings in Section 3.3—The Need for a Room of One's Own. © Stefanie Wuschitz, 2021.

3.4. Limiting Factors in (Art-) Making

Struggles with self-confidence were a recurring topic among interviewees. Even participants in powerful positions, such as a company founder or an art manager role, described the need to often prove themselves worthy of the positions they hold. (P5) mentioned over-preparing for meetings, so others wouldn't think they were *that stupid, crazy artist*. Several interviewees agreed that when it comes to either implementing an idea or taking a step forward for work, overthinking is a limiting factor (P2, P5, P8). They connected this feeling more to external than internal validation, describing meetings in male-dominated environments as spaces where they didn't have an allowance to make mistakes and, as young (24 to 43-year-old) women*, were often not taken seriously (P5, P8). P5 even described playing the helpless woman* to fit the expected role and achieve here goals. Two participants emphasized specific situations where external validation, for example by winning a prize (P3) or having their work be chosen to be displayed at a gallery (P6), boosted their self-confidence.

Struggles related to art-making were also prominent in the interviews, specially related to economical and work-life balance aspects of working in this field. Several participants (P2, P6, P7) described looking for part-time jobs to support their art-making. The scarcity of financial support had a negative impact on the scalability of projects (P5). They looked for artist-in-residency programs or art festivals to gain access to studio-like spaces and materials for a much lower cost.

Despite the attractive offer of access to art- and tech-making infrastructure, some participants described being initially reluctant to join the maker festival where the study was conducted. Interviewees described needing to be emotionally (P4, P6) and technically (P4, P7) prepared to join the event. The emotional preparation related to not having the energy to deal with the possibility of not fitting in, having to deal with a hostile community, and the fear of a lack of necessary technical skills. Some interviewees (P6, P9) shared impressions of Schmiede being an elitist event, where the majority of participants would have academic degrees and a strong focus on mastering new media and technology. Many interviewees immersed themselves into the festival slowly (P4), for example by visiting exhibitions opened to the public in previous years (P3), or initially coming to assist someone else's project (P1, P6). In fact, all participants initially came to the maker festival through the recommendation of a (close) friend who had already attended previous years' festivals (see Figure 4).

Figure 4. My friend said it's ok. Visual interpretation of the findings in Section 3.4—Limiting Factors in (Art-) Making. © Stefanie Wuschitz, 2021.

3.5. Consequences of Sexism to Making Practice

Several women* (P2, P4, P7, P8, P9) described having unpleasant experiences when working in male-dominated environments. P7 highlighted a situation in a makerspace where she attended an event and no one came to talk to her, or even acknowledged her as she came in. Eventually, after finishing her drink, she simply left. P4 talked about how her male colleagues tended to behave inappropriately in public, but only apologized privately, avoiding admitting to mistakes publicly. In general, their impressions of an environment focused on technological making were those of an unwelcoming space, mainly occupied by competitive men*. For them, entering such spaces was tiring and emotionally demanding; it created a space they would not join without hesitation. In many cases, these women* preferred to distance themselves from sexist men* and unwelcoming spaces, instead of trying to adapt or change the norm: *I don't want to use all of my energy to fight against it* (P2). They argued that fighting the system is too exhausting and that it is often hard to take the role of the fighter, or to always be '*that* person' that is calling men* out (P4). At the same

time, P4 mentioned that she feels a lot of pressure to *be loud* and wishes other women* would be louder, too.

The feeling of isolation and being unwelcome had a direct impact on the way interviewees work. They claimed that feeling welcomed by a community gives them confidence, so they search for spaces where they feel respected and valued. If they cannot find that in a particular place, they are forced to find their own space, or *bubble* (P2), where they can work alone, without being disturbed by others' behaviour. P2 described having found a spot between programming and arts, where very few people work, so they would not have to deal with the odds of competition. From their point-of-view, men* were less afraid and had an easier time claiming their space, which benefited them with prestigious positions and better work opportunities. P2 explained that in her perspective, resistance shapes the path for women* in a way it does not for men. As an example, P5 said that even working in a field dominated by women*, most leading roles were occupied by men*. P8 suggested that rather than using all of their energy to fight the system, women* should try to *sneak through the system* by *making their own rules*. Overall, the interviewees seemed to carefully consider when they want to fight for something, and what is worth fighting for.

Reflecting on ways to approach these issues, they agreed that simply putting women* in power positions is not enough, especially because, according to the interviewees, women* themselves could reproduce sexist behaviour. They indicated requiring more conversations about these issues, including feminist examples while growing up, something they believe would have given them more confidence and anticipated knowledge to deal with misogynistic situations. P4 made a remark about not *hav[ing] feminism to makes sense of things*, she could feel *something was wrong* when growing up, but without a feminist mind frame she could not understand why it felt *wrong*. Now, being aware of a feminist agenda, she would understand. A few interviewees (P9, P10) also said they had to explicitly look for female role models, and reported that most of their male peers didn't follow or know female professionals in their field. They wished these men* would acknowledge their privilege and reflect about the space they take to work towards opening up space for others who struggle with securing their spot (see Figure 5).

Figure 5. Stick to my bubble. Visual interpretation of the findings in Section 3.5—Consequences of Sexism to Making Practice. © Stefanie Wuschitz, 2021.

4. Discussion

In this section, we discuss the findings from the interviews that took place at the maker festival. Based on the overarching themes described above, we identified two perspectives

in the data, which we describe as *portraits* and which function as a basis for the subsequent discussion.

4.1. The Maker Portraits

These fictional portraits are a composite of highlights taken from the data analysis, and do not represent the individual description of any one of the participants. They are a composite understanding of information we collected from the interviews. The stereotypical maker portrait is a combination of the description of interviewees' experiences with men*'s behaviour and the culture in spaces dominated by men*, described in related literature.

4.1.1. The Women* at Schmiede: A Maker Portrait

The women* who shared their perspectives with us have a few traits in common: in general, they were young, highly educated people, who found a support at home to explore (artistic) making practices in their lives. In case the support system at home was not in place, substitute role models were often found in the form of mentors in professional or academic contexts who supported the pursuit of a career in the field of arts, science, media, technology, or an intersection of those. They've found their way into previously inaccessible spaces with help from their friends, and in turn feel compelled to help others—their friends, colleagues, but also future generations—to 'find their way' as well. These were people who looked to expand their practice from a theoretical perspective, but also on a practical level, and to this end often sought collaborations in diverse fields. They searched for events and spaces that foster interdisciplinary approaches to making and at the same time offer a supportive community. Nevertheless, taking the first step to actually join these spaces was daunting, due to their (often) unwelcoming environment, which took a lot of effort from women* makers on a practical and a personal level, requiring both solid technical skills, as well as robust emotional strength.

4.1.2. The Stereotypical Maker Portrait

A 'real maker' would make tangible things that have a social, technological and economic impact. Their thinking would be characterized by a business-orientation. They would not be afraid to show off their technological skills in front of newcomers—but would not necessarily be interested in helping those newcomers feel welcome in 'their' space. They would easily voice their needs, giving them an advantage when trying to further themselves in their field, their practices, or their skills. They would work together with other makers that are like-minded, work similarly, and share their characteristics.

The description of the first portrait points out facts that makes us believe that these women* could easily be described as makers, including by their own view of what could be described as making. They struggled, however, to take the place of the second portrait: the stereotypical maker. Comparing both descriptions, we notice that what the woman* maker is looking for—mutual support, mentorship, sharing of skills, materials, and points-of-view—can either not be found within the bounds of the stereotypical maker character, or seems to be inaccessible for women*. This means that what these women* experienced at spaces for making did not meet their expectations and these spaces did not feel, in general, like a place they would fit in.

4.2. Fitting into the Maker Community Versus Making the Community Fit

Toombs et al. [51] concluded that the access barriers to hackerspaces are often more sociological than related to lack of knowledge or skill by prospective participants. Similarly to our findings, the main barrier observed in their study was the difficulty of underrepresented groups to fit in the maker community. The second issue related to the disparity between the two aforementioned portraits is how these women* defined themselves. Most of the interviewees in our study were reluctant to call themselves makers because they related the term to a making that is primarily technology-oriented. A 2014 report on the pro-

file of women and girls makers by Intel and Harris Poll [1] showed that women were more likely to identify with terms such as creator, designer, artist, crafter, and inventor, whereas men* tended to relate more to terms such as tinkerer, hobbyist, DIY-er, and engineer.

In our opinion, this adds to the social barrier by creating a stigma of how a maker should act or look like. Perhaps, part of the need for representation in making that our interviewees talked about could be solved by opening up narrow understandings about styles of making. The approach to making described by these women* definitely fits what maker festivals or makerspaces preach; however, it seems that these spaces fail to credibly convey that they invite different, but similarly valid, ways of making. For instance, it might be promising for makerspaces and maker festivals organizers to soften the heavy reliance on the *identity* surrounding the maker movement towards a focus on diversity in types of making that explicitly foreground currently understated forms of making (e.g., crafts an arts) and maker profiles [52]. In our own view of the maker festival that was part of our study, the strong focus on the arts is a good example of how it is not only serving as a means to bring women* to the maker community, but as a way to value arts (and also crafts) as a form of making that is suitable and important to the maker community. We must note, however, that this is not enough to eliminate the challenges women* face in engaging with maker communities.

4.3. A Maker Festival of Care Versus A Maker Festival of Independence

According to Toombs et al. [51], in the ethos that "everyone can be a maker", "everyone" is reduced to a certain social class. They describe a conflict between the neoliberal ideology of hackerspaces with the care system needed to support the community. In contrast to a strong emphasis on independence, self-determination, tech-savviness, suspicion of authority, and so forth, the community strongly depends on a system of collaboration, cooperation, and interpersonal support. However, this system of care is still subordinated to the traditional neoliberal values of the hackerspace. In relation to Schmiede, the festival in our study, despite the interviewees reporting certain hesitance initially, they joined eventually. Reasons for why Schmiede is more inclusive than many temporary maker communities may be rooted in its characteristics. For example, at Schmiede, participants' work is showcased in an art gallery-like exhibition with no elements of competition, and the festival has a strong emphasis on interdisciplinary work—especially in intersections with the arts, and the sense of community extends the festival days through support groups and meetups organized by participants coming from the same region. These characteristics coincide with points raised by the Intel and Harris Report [1] on how to create makerspaces that are more interesting to women* and girls* These aspects could be a lead for why the festival manages to attract and retain more participation from women*.

Additionally, every one of the interviewees came to the festival encouraged by a friend who had previously attended. The importance of peer-support has been mentioned in existing literature on women*'s access to male-dominated spaces (e.g., [53,54]) as well, and we speculate that with the approval of someone they knew and trusted beforehand, they may have felt more confident of their ability to fit in the community. Other characteristics of Schmiede may also have contributed to a system of care, such as reinforcement of expected participant behaviour, information about the community and social norms that were explained before the festival, and openness to participation of families and children. The general age range of the participants in the festival is quite similar to the age range represented by the interviewees, with little presence of other age ranges, which might also contribute to community building and a feeling of being among like-minded people. While these characteristics might contribute to the unique nature of Schmiede and its diverse participants, further research is needed to investigate *how* these characteristics interplay.

4.4. Work-Oriented Making

Several further characteristics of the aforementioned women* makers profile may help us understand women*'s expectations better. For the majority of participants, the projects

they worked on during the festival were directly or indirectly connected to their work or studies, in contrast to, for instance, being pure leisure activities. Regardless of the presence of specific questions in our script, the benefits that participating in the event would add to their work emerged naturally in the interviews. Nothing was said, however, about making in relation to benefits to the self. With the small data set at hand, we are far from concluding that the environment did not provide personal benefits to participants, but it is interesting that there were no remarks to that end at all, especially when contrasted with studies of craft making, where the benefits to the self for joining crafts guilds were very prominent (e.g., [55–57]).

4.5. (Not) Worth Fighting for Space

The focus on work-oriented making, or more generally, making as a means to an end, can be connected to what the interviewees described as 'being tired of fighting the system'. Trying to fit into a toxic and unwelcoming culture, that many women* we interviewed described as overly competitive, devaluing and under-appreciative, seems to take energy that would be better directed to their work. Most of these women* indicated to step back or to prefer isolating themselves if they had to fight the culture to secure their space in making. Evidence that this is not a phenomenon particular to our participants, may be, for example, the growing number of women-only makerspaces, maker festivals and technology courses. These safe spaces give women the opportunity to experience the making culture without the tiring effort of having to prove oneself [58].

4.6. Role Models Give Inspiration Beyond Their Work

A final relevant factor that we highlight here, which helped the interviewees navigate professional and personal life, was the inspiration from role models. While a majority of the interviewees mentioned the importance of role models in early life to direct them on the path of making and artistry, three participants specifically emphasised the importance of role models on a social level, as an example of the *space they take up* (P8). For them, sharing personal stories, struggles, and victories mattered. As Puwar [59] notes, "[...] we could say that women are able to enter male spaces when established insiders welcome them, support them, in some ways adopt them and show them the way[.]" [59] [p. 121]. A role model who is already embedded in a space, and comfortable taking up space, can thus facilitate boundary crossing for 'newcomers', either directly through personal contact, or indirectly by showing that there is a place for women* in a particular space.

The interviewees indicated that they looked for assurance that activities would not threaten their personal lives in terms of finances, emotional load, or time: *It's important to talk [with role models] about different lifestyles, to have examples of personal life balance* (P2). Again, they were not willing to waste their resources into something that shows no return on investment. This does not mean, however, that they were not willing to fight for change, but rather that they preferred to set boundaries of how much effort 'fitting in' is actually worth. In the festival our participants' attended, the organization supports forms of interaction among participants that exceed the festival boundaries, such as online communities and self-organized, external meet ups. These spaces allow participants to look for other's support and also makes participants' work visible to the community. They also had initiatives in the past that made the women*'s work at the festival explicitly visible, such as a dedicated exhibit to showcase women* participants' projects (http://kunstraumproarte.com/schmiede-017-schmiedepolis/, accessed on 19 August 2021). These examples may serve as an inspiration for similar events and spaces to help women* gain space in making.

4.7. Schmiede and It's Nearly-Equal Gender Balance

Choosing Schmiede to be part of this research happened for several aforementioned reasons. As described previously, we aimed to understand the making practices of women* attending the festival and whether they considered any of the characteristics of Schmiede as particular contributors to the gender balance among attendees. The participants were

briefed about the purpose of the study at the start of the interviews, and they knew we were particularly interested in gender aspects. Interestingly, even when we placed a question about making explicitly asking about Schmiede, the participants had a tendency to generalize their answers and talk about broader experiences with making. As a result, it became difficult for us to build a very detailed profile of the festival, as we initially intended. However, we were able to collect women*'s perspectives more broadly.

Characteristics of Schmiede still appear throughout the findings and were fairly positive. The interviewees described the festival as a space that supports sharing, collaboration, and networking among participants, allows for productivity in a less stressful way compared to their usual work setup, and provides networks that extend beyond the 10-day festival. The self-employed participants also mentioned being on the look-out for events similar to Schmiede, as an opportunity to find the time and space to establish goals and finish projects. Nonetheless, besides these positive experiences with the particular making festival, the interviewees described their general experiences as continuous struggles to connect with the Maker identity and to fit in with the making community, similar to what has been found in literature (e.g., [52,58,60]).

We assume that a few characteristics of Schmiede contribute to attendees seeing the festival as an exceptional, safe and comfortable space. According to the organizers, the festival has a core group of people that tends to come back every year. Some have participated every year for over 10 years already. While in some cases, a group of experts who 'know their way around' may lead to exclusion [61], at Schmiede, the familiar atmosphere created by the core group may make it easier to 'feel at home'. The organizing team and the participants themselves also promote networking among participants during and after the festival. For instance, each year, a group of participants organizes what they call the "WeAllWall", where every participant has a portrait photo and a description of their skills, interests, and ambitions for the 10-day festival. During the event, other small, often self-organised initiatives (such as workshops, jam sessions, or yoga practice) sets the stage for participants to have informal chats, exchange ideas, or experiment together with new projects. The physical setup itself might also foster the sense of community, since participants need to gather their own furniture and self-organize to define who is occupying and sharing which room of the building, taking into account (and, consequently, negotiating) what kind of making and collaborations they are looking for. Although the physical, collocated setup of the festival only lasts for 10 days, Schmiede offers an experience of social togetherness, where temporary relationships can easily be built and extended towards non-formalised, but continuous networks for the participants.

It is also very important to note that, differently from most "standard" maker festivals, Schmiede has a strong focus on the media arts community. This means that the festival might attract a slightly different overall population than other maker festivals, something that needs to be investigated in future studies. We have discussed previously that the focus on the arts and the use of artistic formats for work display are ways to foster more participation of women* in making, but it certainly should not be the only effort. There is plenty of space for researching the particularities of women* who make, and the surrounding communities. In future studies, we would also like to address the making practices of men* and investigate the type of community building efforts in a way that it can be comparable across genders. We hope that the findings in this contribution inspire other researchers to carry on studies and experiments related to gender and making.

5. Conclusions

In this research, we unpack characteristics that women* makers consider meaningful in maker spaces and festivals. To understand aspects of spaces and events that could support women*'s engagement in making, as well as the preferences and experiences of women* makers, we interviewed 10 women* attending a particular maker festival with a nearly equal gender balance. The main characteristics identified in this study are:

1. Women* makers not necessarily fit, or even might not *want* to fit the stereotypical maker profile;
2. Women* makers seem to make as a means to an end that is expected to return something for the maker's investments;
3. Fighting one's way into maker culture can be tiring and result in a preference towards isolation from, rather than integration into, a maker community; and
4. Role models can not only set examples for work-life balance, but be an inspiration for taking up space in making and the world.

We identified two different perspectives from the data, which we named the *women* at Schmiede maker portrait* and the *stereotypical maker portrait*. The first represents the characteristics identified in women* who attended the maker festival, and the second, descriptions of their experiences with male* makers' behaviour and the maker culture overall. What is remarkable is that the (stereotypical) maker portrait, which is based on the interviewees' notion of makers, does not meet their own descriptions of themselves making, and the maker spaces they describe are not a place they would easily fit in. The difficulty to fit in, however, did not relate to lack of skills or interest, but rather to an unwelcoming environment. Nevertheless, these women* have made it to the maker festival against the odds and, once there, often thrive. These insights point to the need for change in the organization and planning of not only maker festivals, but also other types of temporary and permanent maker spaces. Changing culture and attracting more diversity will be beneficial for excluded groups as well as the existing maker community to achieve their own political claims (e.g., [31,60]). With our discussion, we support and add to the existing research on women* participation in makerspaces to open up opportunities so that one day the characteristics of the *women* at Schmiede maker portrait* will be incorporated in the *stereotypical maker portrait*. Attention to the system of care is an initial step for bringing change to these communities. It seems essential to acknowledge and embrace different forms of making and understand that women* might have diverse ways of conceptualizing projects, as well as different goals. Our results unveil a variety of (problematic) experiences that women* made and expectations they formed with regard to making prior to participating in the maker festival. Some of those confirm existing findings, others bring to the surface aspects of inclusive making that may inspire other maker spaces and events: to unite technological making with artistic practices, to create an environment that leads previous participants to motivate prospective participants beyond gender-constrains through sharing, caring, and interdisciplinary work, to not require women* to fight individually for equality, but provide them with a space where those fights have been fought already.

Therefore, it is also necessary that not only women* invest in evening out gaps, but also men*. It is necessary to learn what kind of support women* makers need (or don't need) when approaching spaces for making, to recognize the importance and cherish the new opportunities of diverse communities and fields working together, and join in fighting the status quo.

We believe that the results of our study and future studies in similar directions, should inspire concrete actions. Investigating the practices and particularities of maker communities can elicit points-of-interest for proposing practical interventions and actions in existing maker spaces and maker festivals. Our own future research plans aim to design and implement interventions, based on findings of empirical studies, in partnership with existing maker spaces and evaluate the impact of such actions both to the attraction of women* and the overall experience of women* that already participate in such spaces.

Future studies can still find space for collecting empirical data to support existing findings, and provide information about case studies of successes or failures in practical attempts to tighten the gender gap in the maker movement. Finally, we invite others to approach two gaps we defined after designing and implementing this study: the need for more data on the behaviour, expectations, and experience of men* makers to provide a ground for comparison with women*'s experiences, and more in-depth exploration of

specific actions by makerspaces and festivals that focus on the long-term maintenance of women* participation, not only activities that aim to spark interest in making.

Appendix A. Interview Guideline

Appendix A.1. Interview Preparation

- Introduce project and aim of research
- Explain methods of data collection and obtain informed consent
- Present demographics survey
- Collect contact details

Appendix A.2. Interview Part 1: Introduction

- Who are you?
- Can you tell me a little bit about yourself?
- What is your background?
- Do you work as an artist or maker?
- As what kind of learner would you describe yourself?

Appendix A.3. Interview Part 2: Schmiede

- How many times have you participated in Schmiede?
- Do you feel at home at Schmiede?
- What brings you to Schmiede?
- How did you find Schmiede?
- Do you participate in other hack festivals or meet-ups? Why (not)?
- Do you usually/Did you come prepared with a project, or are you (usually) waiting to see what happens?

Appendix A.4. Interview Part 3: Making & Craft

- What do you do? What is your craft? What do you make?
- Why do you make/craft/create?
- How did you get started with this craft? How did you get into (technological) making?
- Did/Do you experience obstacles?

- Would you describe yourself as a maker?
- Do you make on a day to day basis? Is it your job? Is it more of a hobby?
- How do you get started on new projects? How do you start learning new skills?
- Do you ever feel held back when learning something new?
- How do you problem solve? How do you deal with failure?
- What tools do you use?

Appendix A.5. Interview Part 4: Inclusivity & Community

- Are you part of any maker communities, other than Schmiede? How did you join these?
- Are there any people you would consider mentors?
- Have you experienced exclusion in relation to making?
- Do you share your making practices with friends and family?
- Do you recognize the problem of inclusivity, or do you think it does not apply to you?

Appendix A.6. Interview Part 5: Solutions

- Is there anything that would have made it easier for you to get involved in making?
- How would you like to see your practices evolve? What would you like to learn? What would you need to do that? What would be your dream, as a maker/hacker/performer?
- Do you think there is anything we can do for young girls now to make it easier to get involved in these kinds of crafts/making? What could change in the spaces and communities that currently exist?

Appendix B. Affinity Diagram

Appendix B.1. Theme 1: Enrichment of Work Is Achieved through Negative and Positive (Social/Collaborative) Experiences

My work is interdisciplinary

- In my work, I often combine different media
- In my work, I often combine theory and practice

Failure, and learning how to deal with it, is essential for my practice

- I have learned how to deal with failure
- I understand that failure is a part of the learning process
- Failure becomes a problem when it makes my personal life unstable

Sharing and getting feedback on my work is relevant

- I share my work with people I know
- Talking about my work with others is beneficial
- My work is open to interpretation
- I am interested in making the arts more accessible to people outside of the field

My work was enriched through new experiences

- Going to university opened doors for me
- I am going (back) to University because I want to be able to add a theoretical approach to my work
- Experiencing a different culture enriched my work
- I prefer to work collaboratively or in an environment with other people because it is enriching to my work

Visiting Schmiede is beneficial to my artistic/making practices

- The physical space that Schmiede provides supports sharing, collaborating and networking
- I look for events like Schmiede to establish goals and finish projects
- The environment at Schmiede helps me being productive in a less stressful way
- The festival has provided me with a network outside the 10-day event

Appendix B.2. Theme 2: Other Limiting Factors in Artistic and Making Practices

My (lack of) self-confidence is a limiting factor

- I am looking for collaborations but am insecure about my own skills
- I am not confident enough to consider my making as a profession, even though I agree that what I do is similar
- My self-confidence improved through external validation of my work
- I struggle with thinking too much about ideas, rather than just executing them
- I feel like my (leading) role is under a magnifying glass

I am limited by things that take the attention away from my (art) work

- I find that too much bureaucracy can limit artists
- The University limited me or my art
- I struggle with the financial/business side of being an artist
- There are still financial, social, and time boundaries related to participating in Schmiede
- The professional aspects of my artistic work are sometimes difficult to handle
- I often look out to friends for help with the business involved in my work
- I need to combine activities that give me financial security with the time and space to work on my art

I felt Schmiede was a bit intimidating before participating

- I did not feel fully prepared to join Schmiede (emotionally or skilled)
- I slowly familiarized myself with Schmiede, rather than diving in head-first
- I came to Schmiede because someone I know already attended

Appendix B.3. Theme 3: Consequences of Sexism and the Patriarchy Related to Artistic/Making Practices

I find that the presence of women in the field does not mean that women hold an equal position in the field

- My field is well populated by women, but the people in charge are still men*
- I think that women in charge can also reproduce sexist behavior

I wish men* would give more space to women and that more attention would be given to conversations around women's struggles

- If I had more examples and conversations about female empowerment when I was younger, I'd have felt confident earlier on and maybe would have struggled less
- I think that men* should also reflect about their role in gender issues and actively try to change their behavior
- I explicitly look for female role models

I have a hard time finding my space in male dominated spaces

- The way men* in tech work is suppressing my abilities
- In my view, men* are more confident in finding their space and place

I am tired of fighting against patriarchal structures

- I think trying to fight (against) the system is exhausting
- I distance myself from sexist men* because dealing with their attitude consumes too much energy

My work and practice is influenced by whether or not I feel welcome in a space

- I need a space where I feel respected and valued
- Feeling welcome by a community gives me confidence
- I prefer to isolate myself when I don't feel welcome

I am actively trying to change my behaviour to claim my space

- I try changing my attitude to claim my space but it is not an easy task
- I actively try to make my space by changing patriarchal behavior patterns

Appendix B.4. Theme 4: Role Models in Childhood and Adult Life (Career Development and Life Balance)

Family and early-life support were important for my career development

- My family has supported my path towards the arts
- A family member served as a role model for me going into the arts
- I try to be a role model to younger family members
- My childhood was instrumental in my current artistic path
- The path to art and academia was not carved out for me like it was for some others

I need to see more female role models taking up space in all facets of life

- We should specifically discuss historical feminist role models and events in school
- The visibility of role models is more important to me than their (technical) skills

My mentor is someone I trust and admire both on work and personal sphere

- My mentors are people who inhabit the same spaces that I do
- I expect that mentors will provide personal encouragement and teach tricks for the path

Appendix B.5. Theme 5: Preconceptions of What Making Is and the Maker Profile

My making practices are closely intertwined with my psyche

- My ideas are always with me
- Emotional expression through my work is important
- Expressing myself through making had a positive impact on my personal life or work
- I am reluctant to share WIP that I have an emotional connection with

I make things

- I can only call myself a maker if I produce tangible things
- I identify as a maker
- I wouldn't disagree with the "maker" label, but I use a different label for myself

I am not a techie maker

- I see a maker as a techy, nerd guy
- I think that art making doesn't fit the maker definition because it's not driven by market interests

I want/started to learn how to program because...

- For me, learning tech skills is a means to an end
- Knowing how to program helps expanding my work

I learn practical skills by myself through trial-and-error

- I learn new skills in a practical, hands-on way
- I learn tech skills by myself
- When I am learning a new skill, I am ready to try and make mistakes

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