Craft as a matter of care to inspire the design of computational things

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CRAFT AS A MATTER OF CARE TO INSPIRE THE DESIGN OF COMPUTATIONAL THINGS

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ABSTRACT
Craft, the skillful process of turning materials into artifacts, bears many similarities with interaction design as a practice of giving form to computational materials. Zooming into the studios of five craftspeople and through interviews with them, we unfold stories of the joys and struggles they encounter in their practices. Departing from these, we unpack and discuss how craft is a matter of care, using the notion of care by de la Bellacasa. We argue that the dual movements of care in the making and through the artifact are linked and that the ability to generate care through artifacts comes from the care with which they were made. We end with three suggestions of how craft as a matter of care can inspire the design of computational things, formulated as questions that invite reflection and suggest paths to designing technologies with a care commitment.

INTRODUCTION
Industrial design and design of computational things is typically part of a capitalist innovation culture (cf., Escobar, 2018). A culture where obsolescence is planned and designed to achieve a quick turnaround. A culture where we keep our phones for two to three years on average (Statista, 2023). A culture where technological things are rarely ascribed with meaning and value beyond their immediate use (Odom et al., 2009). What if that was different? What if we cared enough about our artifacts to repair them and use them for longer before we replace them? We know that this is a complex issue involving rapid technological developments and that there is no easy fix for this. Still, we believe there could be value in seeking inspiration from more traditional craft practices and finding ways for this to inform the way we design computational things.

Craft refers to a skillful process of giving form to materials to transform these into a new entity, being a utility artifact (i.e., clothes, kitchenware) or a new configuration of matter for decoration or adornment (i.e., jewelry) (Shiner, 2012). A craft process involves using tools to manipulate materials in an orchestration of the craft person's aim, skill, experience, and judgment (Sennet, 2009). Building computers and developing software has always carried a kinship with craft if not labeled directly so (Papert & Harel, 1991; Nardi, 1993; McCullough, 1998; Blauvelt et al., 1999). The rise of physical, tangible, and material computing has only strengthened the notion of interaction design as a craft (Fitzmaurice et al., 1995; Ishii & Ullmer, 1997; Greenberg & Fitchett, 2001; O’Sullivan & Igoe, 2004; Redström, 2005; Vallgårda & Redström, 2007; Bdeir, 2009; Baskinger & Gross, 2010; Robles & Wiberg, 2010; Vallgårda & Sokoler, 2010; Belenguer et al., 2012). Claiming interaction design as a craft or at least as a practice with a strong dimension of skilled form-giving of physical and digital materials is straightforward today (Fernaeus & Vallgårda, 2014; Golsteijn et al., 2014; Tsaknaki et al., 2014; Vallgårda,
are artifacts we are ready to replace when a new version comes along (Odom et al., 2009; Droemann, 2021).

In this paper, we use a series of material craft practices as a lens to understand what we are still missing when we craft computational things. We zoom into the studios of five craftspeople, and through interviews, we unfold stories of the joys and struggles they encounter in their practices. We unpack and discuss how craft is a matter of care using the notion of care presented by de la Bellacasa (2011). We argue that the care with which the craftspeople craft their artifacts enables the future owners to build affective relations and thus care for the artifacts in return. We argue that the crafted artifact helps generate care. We also argue that the craftspeople care for the environment through their materials and ways of crafting for aesthetically and physical longevity. Finally, we present three suggestions of how craft as a matter of care can inspire the design of computational things. These are presented as questions that invite reflection on what interaction design and design of computational things can learn from the craft practices, suggesting paths to designing technologies with a care commitment.

BACKGROUND: INTERACTION DESIGN AND CRAFT

Combining interaction design with different traditional craft practices has led to new expressions inviting new functionality and richer user experiences (Hallnäs & Redström, 2006). Combining interaction design with glass and ceramics, for instance, has invited sculptural objects or objects fitted for domestic aesthetics (Schmid et al., 2013; Rosner et al., 2015; Homewood et al., 2019). Others have explored the qualities of textiles (Berzowska & Coelho, 2005; Ernevi et al., 2005; Perner-Wilson et al., 2010; Worbin, 2010; Nilsson et al., 2011; Devendorf et al., 2016; Bell et al., 2021), paper (Coelho & Ziegbaum, 2011), wood (Vallgårda, 2008; Odom et al., 2018), leather (Tsaknaki et al., 2014), and precious metals (Tsaknaki et al., 2017; Koulioud et al., 2019), each material and craft practice bringing something new to the expressions and thus forms of interaction. Some of these projects have the ambition of sustaining use and value over time by consciously drawing on the aesthetics of wear and tear (Rosner & Taylor, 2011; Tsaknaki et al., 2014; Tsaknaki & Fernæus, 2016; Odom et al., 2018). Others have aimed at bringing some of the specific material qualities into the interaction, like Rosner et al.’s (2015) Sound Bowl, a ceramic vessel designed to record an audio message through surface undulations similar to a vinyl record. These are all ways of working with different material crafts to bring out specific and intriguing material qualities. Craft, however, is more than bringing out the material qualities in an artifact, as we will show in this paper.

Another engagement interaction design has with craft is through its tradition of mending, restoration, and repair. Rosner and Taylor (2011), for instance, looked towards restoration bookbinding as a lens to understand why technologies are so easily replaced, while some books inspire restoration and point to aspects such as authenticity. Similarly, Ikemiya and Rosner (2014) looked at kintsugi and the art of repair as adding value and as a source of inspiration to understand how we might reframe our relationship with interactive artifacts.

Finally, in a bit of an opposite move, interaction design has engaged with craft by developing new digital fabrication technologies that are moving away from or adding to traditional craft practices. These are often called digital craftsmanship or hybrid crafting (Efrat et al., 2016; Jacobs et al., 2016). Here projects are driven by experimentations of combining different materials and digital fabrication tools such as a laser cutter, a 3D printer, or a CNC mill, as shown or discussed in (Zoran, 2015; Saegusa et al., 2016; Frankjeer & Dalsgaard, 2018).

Previous research studies highlight how craft can inform ways of treating materials in making practices, including long-term engagement with artifacts. In this paper, we unpack how craft can be cast as a matter of care. We then discuss how this can inspire designers of computational things to care about other dimensions of their practice, such as how to develop socio-material ties with the computational things we design.

METHOD: INTERVIEWING CRAFTSPEOPLE

We interviewed five craftspeople in their studios to understand their practices, values, and concerns when they make things. We used a snowball sampling method for recruiting all participants, and the first was recruited through a colleague (Heckathorn, 1997). We approached craftspeople through social media and explained the aim and content of our study before inviting them to participate. We deliberately recruited participants within different craft practices, some making utility artifacts and others making artifacts for adornment or artistic expression. All interviews were conducted in English for all authors to be able to participate in the study. Our criteria for participation were: a) to have many years of experience in a particular crafts domain, b) to currently practice craft for a living (either as the main occupation or as a
secondary one) as opposed to having craft as a hobby. This was important since we wanted to dig deep into the crafts’ everyday complexities and tensions as a practice and profession.

We interviewed one ceramicist, a goldsmith, two cabinetmakers, and a textile crafter. We interviewed them about their practices, routines, values, and concerns. All their studios are located near the authors enabling us to conduct the interviews in situ. Each interview lasted approx. 60 mins. The interviews were sound recorded and later transcribed. The studios, tools, and specific aspects of their practices (like recycling procedures) were also documented through photographs. Both authors analyzed the interviews using reflexive thematic analysis, meaning a process of “reading, reflecting, questioning, imagining, wondering, writing, retreating, returning” (Braun & Clarke, 2021). We did not start with a lens of care; rather, it emerged as a useful lens to later analyze and reflect on the nuances, values, and concerns of the craftspeople’s practices as they were presented to us.

Table 1: List of craftspeople and their practice

<table>
<thead>
<tr>
<th>Crafts person</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceramicist</td>
<td>Female, has her own craft studio and shop. Primarily making ceramic tableware. Has been working as a ceramicist for 10 years.</td>
</tr>
<tr>
<td>Textile crafter</td>
<td>Female, has her own studio in her home. Makes pillowcases using a manual knitting machine. Sells her products online and in craft markets. Has been working as a textile designer for 10 years.</td>
</tr>
<tr>
<td>Cabinetmaker A</td>
<td>Female, has her own studio, together with a partner. They make both utility furniture and art pieces for exhibitions. She is also teaching cabinetmaking in an apprentice school. Has been practicing her craft for five years.</td>
</tr>
<tr>
<td>Cabinetmaker B</td>
<td>Male, has his own studio. Makes custom-made furniture based on special orders. Also exhibits more unique pieces in exhibitions and arts &amp; crafts fairs.</td>
</tr>
<tr>
<td>Goldsmith</td>
<td>Female, has a downtown studio in the basement and a shop on the ground floor together with her partner. They make custom and ready-to-order jewelry from fairtrade Gold. The studio/shop is more than 12 years old.</td>
</tr>
</tbody>
</table>

PRACTICES, VALUES, AND CONCERNS IN CRAFT

The five craft practitioners we interviewed were different in the materials they worked with, their audiences, and the complexity of their craft. Still, they also overlapped in aspects such as how they thought about experimenting, their relationship with their products, and their pride in their expertise. In this analysis, we will draw out where they overlap and differ.

All craftspeople presented different approaches to making openings for future owners to build long-lasting relations with the artifacts. One was through crafting artifacts that would last beyond a generation. Here they emphasized the quality of the craft and materials combined with timeless expressions that referenced something familiar and added something new. Another approach was to craft expressions that exhibited what they called cleverness, imperfections, or intrigue as invitations for the owners to engage and explore. They were also committed to constantly developing their skills and pushing the boundaries of their craft through experimentation. Finally, the craftspeople were committed to using quality materials, reusing them where possible, and sourcing them as environmentally friendly as possible.

Below we will present each of these emerging themes in more detail, drawing on examples the craftspeople used to highlight aspects of their practices and materials,

![Figure 1 A chair made with salmon skin leather as the upholstery on the back and horsehair on the seat's upholstery by Cabinetmaker B. Photograph by Jonas Lyndby Jensen.](image_url)
tools, and crafted artifacts they showed us in their studios when explaining their approaches to crafting things.

DESIGNING FOR LONGEVITY

The Goldsmith and the two Cabinetmakers all talked about how their ideal was to find a balance between a unique expression and something recognizable in their products, between a contemporary expression and something that can outlast the generation. “Something we're trying to design for in our practices is the in-between factor of having something that has a narrative and is your own thing, but also something that has this more universal approach where people see it, and they understand it immediately.” (Cabinetmaker A)

The Goldsmith gave an example of her process: “[W]e have this really nice customer who comes every year and buys a little thing for his three daughters. And now he wants to give them a bigger thing. Because he got some money from his mother, who died, and all her jewelry was stolen. (...) And you know, a lot of times there is a talk about what they would like but also what’s cool in the long term. You know, what is nice on you when you’re 80? You know, what would you really wear? It's not that it has to be boring. It's not about that. But it's also about lasting, lasting design, really. (...) If you look into a thing now that it’s too trendy, then you'll get bored of it.” (Goldsmith). The Goldsmith attempted to forego fashion trends by deliberately avoiding services like Pinterest and Instagram and had instructed her interns to do the same. She even stopped producing one of her designs when it got picked up by others and thus became a trend.

Cabinetmaker B designs for longevity by combining classic midcentury furniture references with intriguing and highly durable upholstery materials. For example, he used horse hair upholstery for the seat and the intriguing salmon skin for the backrest (See Error! Reference source not found.). “When you sit, you can touch it, and you will recognize the nature of the material. (...) It is an old way of upholstering chairs, and it's very durable. I saw a chair upholstered with horsehair that was 200 years old, and you couldn't see any damage or marks on the horsehair. It is very, very durable and very pretty.” (Cabinetmaker B). In this example, he stressed the importance of the tactile qualities and unique characteristics of making good quality products by combining old different materials and crafting techniques.

Avoiding trends is, however, different from not developing their expressions. They all did so through experimenting to improve their skills but also aiming to create more intriguing and better-quality artifacts.

REFINE THROUGH EXPERIMENTATION

All five craftspeople engaged in experimentation within their craft as a way of keeping themselves intrigued, and some also to push the boundaries of their craft. Some were free to experiment because their materials and productions were less expensive (i.e., the Ceramicist and the Textile crafter). In contrast, others had to apply for art and craft funding or get art commissions to have room for experimentation (Cabinetmakers and Goldsmith). For all, experimentations were crucial for developing new expressions also in their commercial products.

The Ceramicist expressed how she kept playing with different compositions of her glazes. “I make my own glazes and experiment. I buy the raw materials, mix them with a mask, and test them. All these kinds of materials are in the glaze you see out there. Yeah, that's a recipe. It's grams of these raw minerals.” (Ceramicist) (See Error! Reference source not found.)

Cabinetmaker B experimented with the boundaries of bending wood in the tradition of furniture maker Grete Jalk. “There are different difficulties in how to bend (wood). I have done some bending before, but only very simple bends. So, I wanted to try to bend (a piece of wood) in two directions. I sketched a chair where the back is a veneer. But with armrests, bending the other way. So, I made a mold, where it was possible to put in the veneer parts and then put pressure on it and get these wings, "the rests" in the same bent.” (Cabinetmaker B) (See Figure 1)
PERFECTION, INTRIGUE, AND CLEVERNESS

A third theme that emerged was the balance between perfection and intrigue in the intended crafted outcomes. All craftspeople expressed, in different ways, that if something is, or at least appears to be, too perfect, it loses its intrigue. Working with imperfections was deemed necessary by most as a means to develop intriguing expressions. We encountered three types of imperfections as either inherent in the material/production practice, as part of a mistake, or as something deliberately applied.

Cabinetmaker A gave an example of intended imperfections, deliberately applied when making something: “I think it adds an element of inspiration or draws someone closer because there’s something to it that you don’t understand right away. There’s something a bit mysterious somehow. You know the feeling of looking at something that’s just perfect, and it’s very nice and calm, but it’s also maybe not as interesting. Maybe it doesn’t touch you in the same way. So, I think maybe the fact that they are a little bit organic on the outside [pointing to the seat she made of hand-dyed paper yarn] adds an element of something surprising or something tactile, and maybe it’s something that we can understand differently.” (Cabinetmaker A)

The same Cabinetmaker A also expressed how unintended flaws or imperfections that can happen when making something can offer an “aha” moment for the craftsperon and also potentially for the owner of a crafted piece since such flaws can add an element of cleverness to the artifact: “I think somehow, with all the surprising elements, or the flaws, things that happen along the way, it adds an element of cleverness because then you have to reflect upon the piece and see how ok, how can I work around this flaw and make it look integrated? Or as if it was part of the... like, always intended somehow, and I think that’s what we lose in mass production.” (Cabinetmaker A)

The Ceramicist talked about imperfections inherent in the materials and production process of working with clay and the kiln. She described these (clay and kiln) as having agency, so she reflected on her practice as a process of deliberately creating something without being able to control the outcome fully. She considers this as bringing a kind of uniqueness to the crafted pieces, which people seek: “Something happens in the kiln with the color (...), since, I mean, there are so many factors that affect the glaze. So, the layer, the thickness of the layer, where it stands in the kiln, if it’s high or low or in the middle, or if it stands next to something else, that would also react on it. There are many unknowns.” (Ceramicist). The Ceramicist also talked about mistakes or unexpected imperfections occurring during the making process as something expected and accepted, and which can add a new dimension to a design: “Mistakes happen, and you use it for something else or see a new purpose or a new like aesthetical thing with that (mistake), which is nice. I think that happens a lot when working with clay.” (Ceramicist) She showed us a vase she had made, in which an unintentional bend of the clay on one side resulted in an intriguing form that she kept in the final piece.

The Goldsmith approached this theme in the opposite way, in that she always strives for perfection, even in things meant to look accidental or casual. In one of her experiments, she explored the expressions of paper and paper scraps but done in fine silver (See Figure 4). Making them into broaches, she needed a hanging/lock that would look like someone made it at home, but it still had to be super precise. So, to make this simple hanging/lock, she made countless models exploring different ways of making it super accurate yet fit the narrative of being made by an amateur: “And down here when you look at this, it doesn't look precise. But ask [the intern]; she knows we want exact things. So, it's a way of thinking in exact terms, so of course, we redo a lot. Even I had to make that over because we were not satisfied. So, often when being melted again, nobody but us can see it. You know, that's what you're learning (when practicing craft). And that's a skill in the craft. And it takes just hours and hours and hours and hours.” (Goldsmith)

This is a different way of working with the cleverness of the expression. It is not mistakes or imperfections in the materials or production but deliberate and super precise nuances that – to an untrained eye – appear as the surprising wrinkles or cracks keeping the viewer's interest. The combination of perfection and imperfection becomes a strategy to maintain the interest and quality of the product.

The Textile crafter explained how she carefully chose colors and materials that worked for her and had an element of electricity: “I am trying to find some interesting colors that create some kind of energy. I think, Oh, that's an exciting meeting between colors. And then from there, I go to knitting [the chosen color combinations], which is amazing.” (Textile crafter)

Each pillow design is based on a moodboard of photos and illustrations that express an often-sinister atmosphere. Based on this, she finds yarn samples and other elements that she spent a long time compiling to make intriguing color combinations for her knitted pillows. (See Figure 5)

MATERIALS AND ENVIRONMENTAL SUSTAINABILITY

All craftspeople talked about their relationship with materials and how they are careful not to waste any for economic and environmental reasons. The Textile crafter tried to use what materials she already had “I try not to buy more but to use what I have [talking about yarns] because it doesn't make sense when I have so much, to start buying more. I also applied for a scholarship to visit the yarn factory in Italy to learn more about the materials. I tried to change my yarns to get [a local environmental certification].” (Textile crafter)

Similarly, the Ceramicist reused leftover clay. “There will always be leftover clay [after making something]. So, you can put it in buckets, and put water on and then remove the water from the clay after - like this, water on the top. And then, I will put all of this onto a plaster plate. Then it will dry a bit, and I can wedge it again. It's a long process with recycling clay.” (Ceramicist)
The Goldsmith presented a project where she treated plastic as a precious material. She had taken the plastic wrap from a candy bar and treated it like a precious material with engravings. Imagine “if we did the same with every material, like if you're putting it on, then we could take care and develop big love for this really bad plastic. I was working with the worst thing I could find. I tried to do something nice. And it was a good feeling.” (Goldsmith). (See Figure 6) Initially, she had not done it to be eco-friendly, but caring for this cheap material made her reflect on how it could contribute to more sustainable practices.

The Goldsmith also talked about how, for the last 12 years, they (she and her partner) have been using Fairtrade materials in the studio because they became aware of how politically problematic and polluting for the environment it is to use non-fairtrade metals. To her, “this is the right way of making jewelry. This is the right way of using materials.” She explicitly articulated: “I just think it's very important to change the mining industry. (...) it's a big discussion, you know, for us. (...) So right now, when we do new things, we do it in Fairtrade. And when people come in, we ask if they have some old silver and gold. So, if people come in with the stones and the silver and gold, I would love to make something from that.” With precious stones, however, they were still looking for good Fairtrade options. Like solar-powered diamond productions.

RELATIONS WITH THE FINISHED ARTIFACTS

The craftspeople experienced different relations with the artifacts they produced. The Goldsmith expressed it as something that happened a lot at the beginning of a career because the artifacts represent part of their identity – that attachment lessens as the identity is more clearly defined. “I think when you're young, you like keeping it in another way than when you get older. I think that when you're young, you don't know who you are and making these things you put so much into it. And then it's really hard to give up. It's not that I still do that. It's not like I stopped doing that.” (Goldsmith)

Cabinetmaker A also described it as something that had to do with the time and effort put into a piece. This might be the same as what the Goldsmith is talking about: when you are younger, you inevitably put more time and effort into a piece. The cabinetmaker also mentions uniqueness as something that plays a role. “You get attached in some sense. I think that's also why I'm building extras of these (talking about particular chairs she made) because then it's fantastic to have some of them standing somewhere else, but I still have one. But it's only with some pieces that I get that emotional... you know, that feeling. I have one chair that took a month to build – just one chair. And people, when they see it, they often ask if they can buy it, but it's like no, you cannot because it's also crazy. It's like, knowing that it's the only chair in the whole world that looks like this.” (Cabinetmaker A)

CRAFT AS A MATTER OF CARE

Through the interviews with the five craftspeople in their studios, we could zoom into established craft practices and unpack how craftspeople working in different disciplines approach their processes of making, their materials, and their produced artifacts. Based on the themes emerging from these interviews, we want to cast craft as a practice of care. A care for materials, for nature, for aesthetics, for their skills, for the process, and care for the people living with the artifacts for hopefully a long time after making.

According to the philosopher Maria Puig de la Bellacasa, “to care signifies: an affective state, a material vital doing, and an ethico-political obligation” (de La Bellacasa, 2011, p. 90). What we propose here is to see craft as a care practice. A practice that is not only material but is deeply engaged with the ethico-political consequences of their artifacts both in their production and in their afterlife. All craftspeople mentioned different approaches to care for their materials in their everyday practices unfolding in their workshops and aiming for sustainable practices of reusing materials or using Fairtrade-marked materials.

Even materially, these crafts are not processes of merely repetitive actions. Care is put into each meeting with the material at hand with its gnarls, knots, and impurities. Using their skills and experiences, they attune to each artifact in their making over time. Skills and experiences they are continuously developing and reflecting on through their practices and experimentations. Craft is a deliberate and careful altering of materials targeted towards making artifacts through the actions of one or more people. Craft, as seen here, produces artifacts that are cared for in multiple
ways and generate care for those living with them and the environment.

Of course, arguing that craft is a matter of care extends the notion of care beyond simple maintenance and repair. Political scientist Joan Tronto argues that care is “everything that we do to maintain, continue and repair “our world” so that we can live in it as well as possible. That world includes our bodies, ourselves, and our environment, all that we seek to interweave in a complex, life sustaining web” (Tronto, 1993, p. 103). In other words, care also includes an aspect of “building” or actions to “continue” our world to make it as well as possible to live in. In de la Bellacasa’s notion of care, which builds on Tronto’s definition, we are obligated to generate care (de La Bellacasa, 2011). Care, in this definition, is thus a broader political and ethical matter with a material grounding.

We argue that the dual movements of care in the making and through the artifact are linked. We argue that the ability to generate care through the artifacts comes from the care with which they were made. From our interviews, we see how different ways of caring can contribute to the becoming of new affective relations between crafts person and artifact, which can potentially be transferred to the relationship between artifact and owner of an artifact. For example, the work to create intrigue and cleverness in the aesthetic expressions was closely linked to work with material imperfections (Cabinetmaker A) or seemingly imperfections (Goldsmith). The intrigue is a hook for people to later engage with and form affective relations.

Another example is the craftspeople’s ambition of making something timeless that can be used for generations. Their experimentation enable them not to be stuck in the past, while a longer perspective on aesthetics enables them not to be stuck in the present. Succeeding in crafting affective relations between owner and artifact is succeeding in generating care.

Another important point coming out of casting craft as a matter of care is how the craftspeople care for the environment. Their care for the environment is expressed in their practices in three ways: how they source materials, how they reuse materials when possible, and how they try to create artifacts that last aesthetically and materially. This commitment may have many reasons, but it was a vital issue for most of them. It comes from their affective relationship with the environment developed through their intimate relations with their materials.

DISCUSSION

We sat out with interest in exploring what interaction design, as a practice of making things with physical and computational materials, can learn from more traditional material craft practices. Curious as to whether this could be part of an answer to how we can begin to care enough about our computational things to repair them and use them for longer before we replace them. We interviewed five craftspeople to learn about their practices, values, and concerns. Casting their crafts as a matter of care gives us a handle to translate some of their practices, values, and concerns into a practice of interaction design. By unpacking and presenting elements of care in craft practices and processes, we suggest that becoming attentive to these elements can provide a lens to understand what the time-consuming messiness of manual labor and imperfect material expressions has to offer the making and maintaining of computational things.

Crafted artifacts, like the ones produced by the craftspeople we interviewed, are less controversial and riddled with ethico-political landmines than most computational things. However, that should not be an excuse to dismiss them as simple. On the contrary, even if these crafted artifacts are more straightforward, their ability to form stronger affective relations should be an inspiration (Odom et al., 2009). More concretely, using the lens of craft as a matter of care when designing computational things can support practices of actively engaging with, and appreciating imperfections, maintenance work, and fabrication, also in interaction design as a craft practice. While craft rarely scales well in units produced, it has other qualities, for instance, in the longevity of the artifacts, which can be essential to consider even in a world of the Internet of Things, robots, self-tracking technologies, and eHealth. Our study makes us raise three questions for the interaction design community.

1. What if we look at our making processes in interaction design as a matter of craft, with the caring commitments it fosters?

When we make computational things, we craft code and physical artifacts, yet we rarely see the caring commitment expressed by the craftspeople we interviewed. Maybe it is because computational things are typically thought of as mass-produced artifacts, and we thus tend to outsource the making to others, or because it is an interdisciplinary endeavor where no one gets the whole picture in crafting their part. The craftspeople we interviewed developed their caring relationship with the artifacts, their longevity, and their impact on nature through their actions. That the element
of care resulted from a reflection in action (Simon, 1996). Computational things do not all need to be mass-produced. When they do, it may be that the process leading to mass production becomes a craft process. Anthropologist Tim Ingold (2010) refers to the process of giving form to matter as a state of attentiveness. Referring to Deleuze and Guattari’s Mille Plateau, Ingold argues that making is not a matter of iteration but of itineration – meaning it is about traveling attentively from place to place. In craft, materials are not “forced” into something, but through the skill and experience of the craftsperson, materials are allowed to occur or slowly be revealed (Ingold, 2010). Following the force and flows of materials will enable them to reveal their qualities instead of imposing form on the material world, a process that Ingold described as foreseeing (Ingold, 2012). In his view, a crafts person can see into the future through a respectful engagement with the “now” (i.e., materials, the process of making) instead of projecting a future situation on the present or determining an endpoint, which, in his view, is a core difference between craft and design practices.

Thus, opening interaction design practices to be more about itineration than iteration would allow a greater attentiveness to what comes. It would entail an interaction design practice in which engaging with the materials and tools is on par with user engagement. That we would develop a practice of thinking with and for materials, tools, as well as people to use concepts from de La Bellacasa (2017). But just as importantly, we should pay more attention to any dissenting-within (de La Bellacasa, 2017). Meaning we should recognize our own attachments and struggles involved in the process of making. The craftsperson presented examples of frustration with materials, tools, and aesthetics, but that it was also in that struggle they learned new skills, forged a deeper relationship with their practice, and developed a sense of care for their practice and their crafted artifacts.

2. What if experimentation does not end in the initial stages of a design process but is an attitude to remain open and receptive to the becoming of things?

The craftsperson we interviewed all mentioned different approaches they take to keep themselves intrigued in doing their profession, and some also push the boundaries of their craft. Experimentation is about seeking and breaking boundaries of both aesthetics and function. It is about problematizing conventions through exploring alternatives. In a world of rapid technological development, it is also about understanding the power and the ethico-political consequences of the things we make. They cannot be understood a priori nor solely in the process of making. Experimentation is thus not a distinct phase taking place at the initial stages of a design process. Rather experimentation is a stance of being open and receptive to material expressions and the becoming of the artifacts. de La Bellacasa states that “we must take care of things in order to remain responsible for their becomings.” (de La Bellacasa, 2011). This entails that the interaction designer is responsible far beyond giving form to the computational things. We have an ethical obligation to follow the becomings of our computational things. We propose to see this obligation as part of ongoing experimentation with the world. Not in a blind exploration but in a deliberate ethical, attentive itineration of the lives of things we make. Taking familiar computational things and re-designing them can be an act of experimentation and exploration. Interaction design embracing the ongoingness of experimentation is a way to foster caring relationships with the making process and the artifact being gradually developed, as well as their becomings in use.

3. What if we design our computational things with a long-term commitment to their lives and, thus, the affective ties they form?

This is a question with many different paths for commitment. Directly inspired by the craftspersons, this is a question of aesthetics. What are the cultural norms and expectations we create with our computational things? What are the material and form references? Do the expressions balance the unique and the universal? Does the expression create mystique and intrigue? Are there imperfections (deliberate or otherwise) that will keep the users interested over time? Working with aesthetics may sound superficial, but it is not. From a sustainability point of view, it is crucial that we form long-term commitments (Verbeek, 2006; Droemann, 2021). It is essential that we develop affective ties. Odom et al. (Odom et al., 2009) showed that engagement in terms of appropriation or repair increases affective commitment. Being able to relate to and engage with things beyond when they are new and shiny is crucial to forming such bonds. Similarly, Tsaknaki and Fernaeus (2016) showed that becoming attentive to and actively working with the imperfection and impermanence of materials can be a design resource when making computational things. The intrigue and cleverness the craftsperson work with constitute a hook; they are the agency, the “slight surprise in action” (Bennet, 2010, p. 27) that enables us to form any affective tie with the artifact.

Affective ties are also formed through use and usefulness (Odom et al., 2009). Thus, the quest for longevity also ties into the functionality of
computational things. How can we design to keep interest over time? How can we design for the longevity of use? Are cleverness, intrigue, and mystique a strategy here too? Hallnäs & Redström (2001) and Odom et al. (Odom et al., 2018) have explored such avenues through their slow technologies. Gaver et al. (2003) used ambiguity for the same. Having the ambition of designing for a long life of our computational things is key. We must break the problematic consumption cycle of mobile phones and other gadgets (Statista, 2023).

Reflecting on craft as a matter of care for interaction design from this perspective can offer one possible approach to developing ways of attending to and maintaining relations among a constituency of humans and nonhumans in design processes through concern, care, and humility. This means that a core aim when entering a design process would be to cultivate an open-endedness to the design space and to any other humans and nonhumans involved (including physical and digital materials), scaffolding a space for processes of becoming to emerge.

Attending to such issues and actively engaging with them is not supposed to be easy. It will always involve negotiations of designing with elements of cleverness and exploring boundaries of perfection and imperfection. It will also involve investigating new material combinations and interactive expressions and experimenting with developing our practices to support more sustainable futures of making and long-term use of products. As presented through the practices of the craftspersons we zoomed in on, there is no concrete and final recipe for engaging with such issues, nor is it an easy path to take. But at the same time, as interaction designers, we should continue to probe the boundaries of our practice in relation to affective commitments of care in the things we make.

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