

ONEDAY Shoes: A Maker Toolkit to Understand the Role of Co-Manufacturing in Personalization

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Figure 1. The ONEDAY Toolkit being used to make a pair of personalized shoes.

ABSTRACT

Personalization of shoes is of increasing importance to designers, researchers, shoemakers and manufacturers as mass customization progresses towards ultra-personalized product service systems. Many attempts have been made to design co-creation platforms that allow end users to personalize their own shoes, concentrating on color preference. This research takes a different approach by designing a toolkit for maker-oriented users to co-manufacture their own shoes. The toolkit was deployed worldwide to different users via crowdsharing. Backers (n=237) were surveyed before deployment and thirty users were interviewed after two years to understand personalization over a full cycle of making and use with the crafted research product. We found that users who have higher quality tools and materials in their toolkits are more likely to personalize their shoes while co-manufacturing. The research provides insights for researchers and designers creating toolkits for designing personalization product service systems/configurators and engaging in tangible bespoke processes.

CSS Concepts

Human-centered computing → Interaction design theory, concepts and paradigms

Author Keywords

Personalization; Bespoke Shoemaking; Co-Manufacturing; Research Product; Crowdfunding; Toolkit

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INTRODUCTION

Co-Manufacturing is becoming increasingly important as Designers, makers, programmers and others develop digital fabrication tools in their local communities [19,45]. This combined with changes in fashion i.e. Instagram takes over the role traditionally played by fashion magazines [40], we see users looking for more personalization. At the same time, customization and personalization of shoes is important to large shoe manufacturing and is increasing in importance with 3D printing and other digital fabrication technologies. HCI research is currently interested in shoes as seen in the Smart Soccer Shoes [51], and Shoe the way[38]. HCI is also historically interested in shoes as in the Roulette calculator shoe at MIT described by Steve Mann [26]. Yet these papers focus on the sensitizing and tactile feedback in shoes. We wanted to see how personalization would occur and be perceived over the life of a shoe and designed a toolkit, fig. 1, that could be easily made in a single day.

Technological acceptance in shoes is often limited to materials and sometimes electronics for sports performance. However, the technology used in making shoes is also interesting. To investigate the shoemaking process we turned to bespoke shoemaking as a handmade alternative to the mass-produced /mass-customized systems already offered [9,16]. Our aim was to bring a bespoke shoemaking experience to the user and understand the experience of “design after design”. Previous work [8,21,30] shows design practice is interested in the connection between making and personalization. There is also current research into design methods of personalization [22]. Research has shown that user personalization can improve fit [23] but how does the quality of a self-assembled product lead to personalization? Personalization is important to the TEI and HCI community [6,7,11,12,35,41,50] especially in hybrid crafting [15,28] because it creates a better fit aesthetically, physically, and in terms of performance [30]. Hybrid craft is important to shoemakers as we see 3D printers, CNC mills and other digital fabrication technologies entering the studio. We also

see new companies such as JS Shoe, Feetz and Phits already working with digital fabrication to hybrid craft personalized shoes [5,39]. Personalization is challenging, especially for mass production of goods [2,17]. Large shoe companies such as Nike and Adidas struggle with co-creation customization platforms [33], yet are still moving their production into the realm of Ultra Personalized 3D printed (digitally fabricated) shoes [53].

Bespoke and tailored attire is important to technology and society[1]. The bespoke shoemaking process is a material driven, hands-on experience which is commonly held as the highest form of personalization. It is found in shoes in the shape, color, material, material behavior and last (foot forms) [3] as is illustrated in fig. 2. Recent design research [30] has attempted to translate bespoke shoemaking into a 3D printed process and outlines the difficulties negotiating design characteristics of bespoke shoemaking into 3D printing. Materials are important to bespoke processes and so there is great interest in materials and hybrid materials in related TEI and HCI literature [8,13,36].

Our toolkit was designed to help understand the challenges and possibilities of personalization in co-manufacturing as part of our research into Ultra-Personalized product service systems. Toolkits have been shown as an effective method for “enabling replication and creative exploration” [24]. The shoe was designed with a simple, classic style that is easily personalized for aesthetics and comfort. Once the shoe was designed, we designed the toolkit in three levels; Basic, Full and Deluxe. Each level of the toolkit included more tools and better materials to better study how the availability of tools and materials affected personalization in co-manufacturing. We supported the toolkit with online websites and videos to assist in the making and to show the possibilities of personalization. To keep possibilities open, we avoided specific words like “personalize” and “customize” as we looked for their presence to emerge from the co-manufacturing. Moreover, we were transparent about the design process of creating the shoe and the toolkit so others could engage in similar research and practice.

By means of the toolkit, we gathered information about what degree of personalization would emerge in a co-manufacturing process. We surveyed the makers about their intentions for the kit before deploying it, and then interviewed 30 of the backers two years later. Our analysis is based upon the kit level chosen and the extent to which the makers personalized their shoes. Co-creation schema often tend to see co-manufacturing and co-production as valuable with respect to a “tangible consumer input” [34]. We found that those who ordered the deluxe toolkit, and reported no intention to customize their shoes were the most likely to personalize. Whereas, those who intended to personalize their shoes and ordered the basic kit, were less likely to personalize. In the end, personalization was a result of the availability of resources; tools and materials, that could be



Figure 2. Bespoke shoemaker Mario Bemer personalizing form, style, materials, color and material behavior at this workshop in Florence, Italy.

said to “drive” the maker towards personalized craftsmanship.

Towards Ultra-Personalized Product Service Systems

Co-creation design frameworks such as [17,37] place the personalization in the domain of co-design. Co-manufacturing is seen as “tangible consumer input” [34]. Bespoke shoe personalization brings the user into a craftsman role where personalization is highly possible. As an alternative to Co-creation, we use a theoretical Ultra Personalized Product Service (UPPS) system [43] approach that iteratively creates through the stages of Co-analysis, Co-design, Co-manufacturing and Co-use. In each phase, stakeholders play different roles which can serve the personalization of the Product, Service or System. Co-Manufacturing includes the distributed assembly by several different people, where mass production demands uniformity in the final product, co-production leaves the final product up to the user. Thus, co-manufacturing can be seen as a sort of bespoke practice which can result in personalization. Co-manufacturing is not new and has its roots in assembly practices that are widely applied in the maker community.

Makers

This research targeted makers, but specific toolkit design decisions were made to ensure that the toolkit appealed to a range of users to see if and how they personalize. The maker community has a history of personal fabrication that is relevant to the type of personalization manufacturing we are interested in [4,10,27,31,42,44,48]. Makers have experience in assembling, co-manufacturing and personalization [6]. Makers have a large number of digital and manual fabrication tools / skills available that allow for personalization[19]. Moreover, there is a maker vision of the

future, Fab City [49]; a city that makes everything it needs; food, transportation and manufactured goods such as shoes. Ideally, only data enters and exits. Our shoe toolkit was created inside this ethos.

Research Products

Maker-oriented users expected a kit that would produce a fully useable shoe. The aim of the toolkit was to produce a shoe Research Product. Research Products hold four interdependent qualities; inquiry-driven, finish, fit, and independence [32]. As part of the research we wanted the user to live with the shoe. This required that the shoe toolkit and the resulting shoe must fit the foot and the style of the user in order to integrate into their everyday life. Shoes are also an artifact that is situated deeply in a user's everyday life [46] providing a vehicle for researching "conceptually rich artifacts" [18]. Also, shoe use is typically not a fast user experience, but rather a form of daily slow interaction [20]. It was important to the research that the toolkit created a final product that would help the user participate with the object, reflect upon their decisions, consider personalization, and give them agency over it. As we see in other recent research with Research Products [14,47], it was important to give the user time to make and wear the shoe.

DESIGNING THE ONEDAY SHOE

We started with a series of design goals for the shoe:

1. The toolkit must create a shoe research product that the user could wear as a normal shoe over the expected lifetime of a shoe (18 months).
2. The toolkit needed to allow and encourage personalization while not making it mandatory.
3. The toolkit needed to engage the user in co-production rapidly (we adopted an eight-hour time limit for completion).
4. The toolkit needed to be affordable for makers.

The resulting ONEDAY sneaker was designed to be simple, modifiable and manufacturable in a single day. Bespoke shoes are a labor-intensive process and are sewn by hand [3]. The process can easily require sixty hours of labor to manufacture. With the limitation of eight hours to assemble the kit and keeping the kit economical, a few compromises had to be made. We chose sneakers because they do not require complex industrial machinery to realize and while full bespoke shoes would require great amounts of time and skill, sneakers are easily made and commonly worn worldwide across ages and styles. Moreover, The part of the shoe that requires the most time and cost is the sole. A commercial sole was needed to reduce the time/costs of the last and sole processes. As a result, more attention was not only put into the selection of the materials; the leather, insoles and waxed yarn, but also to the tools. We detailed the design of the kit as it was cut, sewn, punched and crafted by hand. A shoe designer helped us create the shoe. The shoe designer remained a partner in the project and eventually took over the project entirely, creating more toolkits.

The Soles

In early 2015, the sneaker was finding a high place in fashion. Designers like Hugo Boss were creating high fashion sneakers like those found in the Futmid collection. We picked a cup sole that looked identical to the sole used by Hugo Boss from sole manufacturer Procalcado. The soles were injection molded in a coated SBR rubber 85A shore made to last for 18 months. The soles have a minimal internal cup structure that supports the foot and allows for the addition of insoles. The soles are made to be sewn by a sewing machine but we developed a hand hole punch as a Bespoke process calls for hand sewing. The soles were made available in black or white.

The Base Styles

Given the design constraint of working with a cup sole, we started with a classic sneaker shape. We designed a simple sneaker reminiscent of the original sneakers of the 1900's, which many people today would recognize as a Converse sneaker. We generated four different base styles that while similar in construction, have their own signature style as depicted in figure 3. The styles range from an Ultra High Top over the ankle model to an Ultra-Low Top summer style. We designed a style template that can be seen in frame one of fig. 1.

The Cutting Patterns

Developing the cutting patterns was the most difficult process. It was vital that the cutting patterns fit perfectly as the shoes would be manufactured without a last. The last is too bulky to ship and would have made the kits prohibitively expensive. Several prototype patterns were made using common paper tape on a last chosen to fit the cup sole. Five iterations were required to create a cutting pattern that would look good in the four different base styles pictured in figure 3. The holes that attach the uppers to the cup sole are difficult as two-dimensional pieces are shaped into a curved three-dimensional sole. Also, note that the holes in the nose of the toe tend to move to center as they progress to the right, fig 3. This is done to shape the nose of the shoe for the toe box. The patterns were provided in many formats including illustrator and PDF file for digital fabrication.



Figure 3. Multiple shoe styles from the same cutting pattern.

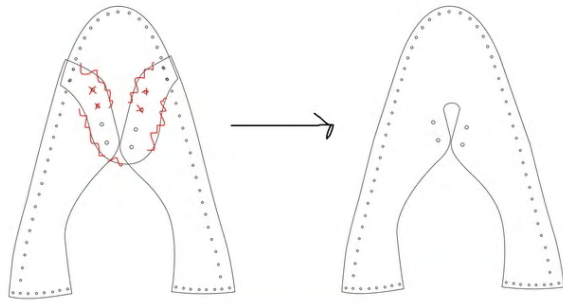


Figure 4. Using the base shoe patterns to realize personalized styles of shoes.

Pilot workshops

Ensuring that the cutting pattern worked with a range of different kinds of users was difficult. Three workshops at the SLEM shoe innovation academy with users ranging from accountants to professional shoemakers, allowed the tuning of the shoe kit. Many problems were discovered, especially in the hole alignment between the upper and the sole. The patterns were revised three times. The included video still shows the original hole guide measuring system. In our final workshop, students made the shoe twice to see how far they could personalize with the kit to check for problems.

Additional Styles

During the pilot workshops, we worked with students to create several different styles of shoe using only the base patterns shown in figure 3. We modified the Adobe Illustrator and .svg files so that the user could easily modify. Figure 4 is an example of how the base patterns can be used to create a completely different style of shoe that one of the students made in a pilot workshop. It was critical to the cutting pattern we had designed that the holes on the sole remained the same, eliminating risk of confusion by the maker when making their own shoe.

From Shoe to Toolkit

Creating a shoe as a kit available from our website may seem difficult, but dealing with the complexity of the research was even harder. We report on our process here to help others looking to make similar toolkits. The toolkit was converted into three levels to explore levels of personalization by varying the materials, material qualities and tools. In this section we describe crowdfunding the kit, designing separate versions of the kit, creating the instructions, and logistics. We offered the toolkit in options ranging from 30€ to 100€. These prices were close to the cost of the quantity and quality of materials included. The kit was named ONEDAY to encourage users that they could finish the project in a day and the tag line “Make your own sneakers” was added to stress the co-manufacturing and attract makers.

The kits

In order to understand how much personalization resulted from bespoke materials, tools and material quality, the three levels of the toolkit with increasing tools and qualities were offered to be made with the user in the co-manufacturing process.

1. The Basic kit contained shoe soles, wax thread, special bespoke needle and instructions. The user has a selection of black or white soles. Backers were instructed to find a soft material 2-3mm thick and provide their own hole punch.
2. The Full kit added leather, a hole punch, shoe laces EVA insoles. (Fig 5) and a selection of black or white soles and Black, Chocolate, Nude or off-white leather.
3. The Deluxe kit included cork foot beds and Vegetable Tanned Leather for uppers and shoelaces. A selection of black or white soles and Sienna or Nude vegetable tanned leather

In our pilot workshops we saw that some users needed only the bare minimum of tools and materials to start while others needed everything placed in the kit. Instructions were made available online, as a print out in the kit and made available through a series of online videos. The instructions were created to make the process seem simple, yet show the makers where to pay special attention. For example, the places where the leather overlaps near the toes and needs to be shaved (scythed) down to prevent a bump that rubs against the foot causing discomfort.

Licensing

The toolkit was previewed at Maker Faire Rome. Many makers, especially those who are more entrepreneurial, were worried about the licensing, i.e. who owned the design of the shoes. We knew from the pilot workshops that the shoe maker feels special ownership over their personalization of the shoe. After reflecting on this fact, we elected to use a creative commons 4.0 open culture license allowing anyone to take the design and make a commercial product with the shoe design and patterns. This ensured maximum creativity and encouraged personalization.



Figure 5. Photos including tools, materials and inspiring end results.

Logistics and Shipping

After a successful Kickstarter campaign, we shipped kits to 237 backers on 6 continents. The kit was designed to fit in an A4 book box that could be easily delivered. Two colors of soles in eleven sizes with three kit options including six, four (Full) and two (Deluxe) leather offerings created complexity. The project had 132 separate configurations for the 237 kits. It would seem that shoes and complexity are made for each other. We wrote a script to generate shipping labels with codes for all the options allowing us to easily package and shipped the vast majority of the kits on December 17th 2015.

Delivery of the Patterns

Patterns were delivered via a Github repository. Just before shipping a significant issue emerged with the patterns. A workshop participant made a second pair and told us that the patterns were too small. After a few stressful weeks of trying to discover what was wrong with the patterns we realized that it was the printer. Many home/offices printers print at 96% scale to avoid cutting off content in the margins. We added square boxes in specific sizes to the paper, instructing makers to measure these boxes, but this remains one of the biggest difficulties as not all makers read and measure.

How the kits allow for personalization

The ONEDAY kit was designed to allow for personalization by allowing several opportunities to modify the shoes form, material, fit and aesthetic. It targeted makers and asked the user to reflect upon the object in use. Examples can be seen in Fig 6,7, & 8. Sole sizes ranging from a 35eu to a 47eu were offered.. The designed instructions included 4 versions of the sneaker, the ultra-high top, the High Top, the low Top and the ultra-low top, illustrated in figure 3. Particular attention was paid to the development of the pattern to create patterns that could be easily modified into many different kinds of sneakers, i.e. fig 3. Many materials such as vinyl and denim were also tested. The patterns were modified to allow the user to find their own soft material 2-3mm in thickness for the Basic kit. We encouraged the upcycling of older fashion products. The Full and Deluxe kit included leather in four colors and two qualities.

Inspiring images were added to Kickstarter and the Oneday website [29] with illustrations showing how to modify the pattern, such as fig 5, along with laser cut files examples of

laser etched leather. Also the terms personalization and customization were specifically avoided throughout the project. The expectation was that the makers would make and wear the shoes for 18 months with most personalizing the shoe in some way.

FINDINGS

Beyond the description of how the kit was designed, we surveyed Kickstarter backers on how they intended to use the kit as part of the backer survey. Two years from the December 2015 ship date backers were sent a request for interview. 30 backers were interviewed about their kit use and if/how they personalized their shoe. Backers who gave the kit as a gift were excluded.

Initial Survey and analysis

After the completion of the Kickstarter, a survey was sent to the backers. We asked about the sole / leather color and how the user intended to use the kit. Kickstarter has strict rules about marketing/demographic questions which severely limited our inquires. In the survey we asked whether the kit was intended to “make the template shoe”, “redesign the shoe” or “give the shoe as a gift”, see table 1. 35% of the makers chose the Basic kit, 37% chose the Full kit and 28% chose the Deluxe kit. Roughly 20% wanted to give the kit as a gift; less in the Basic kit 17% and more in the Full kit 22%. More interesting was the choice between making the template shoe and redesigning the shoe. 40% of the Basic kit chose to redesign the shoe. This is far less in the Full kit, 26% and even less in the Deluxe kit 18%. Making the template shoe is the opposite with 42% of Basic, 52% of Full and 62% of Deluxe. The backers first name and shipping country was fed into a GDPR compliant gender api [52]. 99 Backers were identified as Male (49%) and 70 as Female (35%) with a minimum of 80% accuracy, 16% were indeterminable.

The different kit levels roughly spread evenly over the backers providing adequate groups of all the types of kits. The survey indicated that people who backed the Basic kit intended to personalize the shoe by redesign much more than the Full or Deluxe kit backers. The kits appeared spread reasonably over males and females 15% more identified as male, although 16% are not identified as a binary gender.

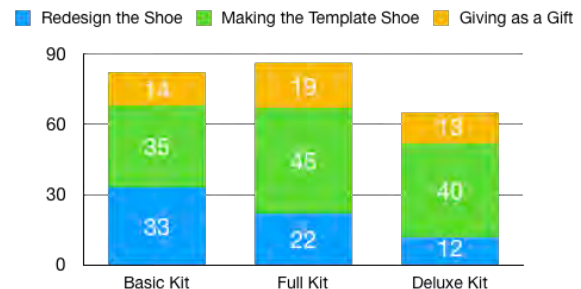


Table 1 Initial survey results about intended use of the kit based upon which kit was selected.

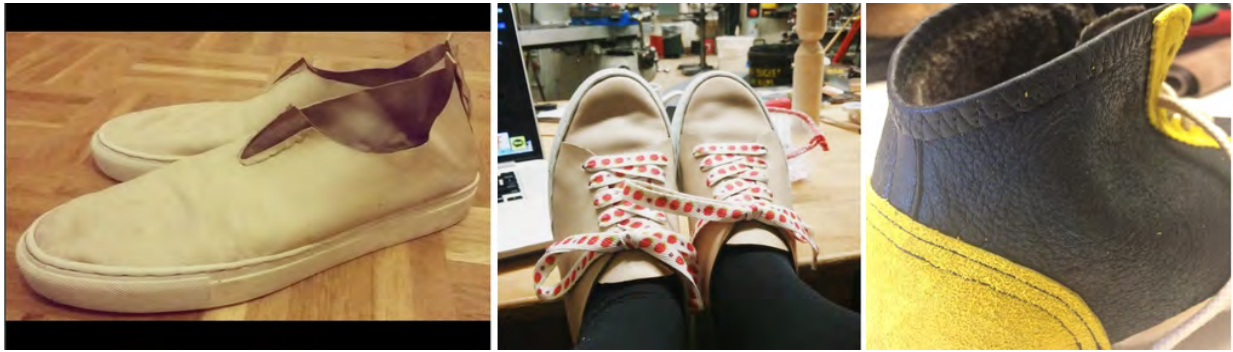


Figure 6 Photos of the Basic kit shoes by mrlaurens, swkang94, and 1womaninspace on Instagram

Interviews and analysis

Thirty of the backers who did not give the kit as a gift responded to our request for interview, all 237 backers were asked to interview multiple times. 17 respondents were male, 13 were female. 14 backed the Basic (B) kit, 8 the Full (F) kit and 8 the Deluxe (D) kit. The interview questions centered on why the maker wanted to make the shoes, if the maker had made the shoes, how the experience went, how they personalized the shoes, and how they would do it again. The interview questions were developed to evidence the state of the shoes and express if/how the user personalized. In the following sections quotes that exemplified the respondents in the Basic, Full and Deluxe kit groups are presented along with interesting exceptions. Respondents are classified by number and kit i.e. B1 is the first person in the Basic kit interviewees. A series of images from Instagram by the users of the kit reflect the responses to the survey as seen in Basic in fig. 6, Full in fig. 7, and Deluxe in fig. 8. A reflection on what each question means is added to summarize the analysis from the data.

Why did you support the ONEDAY kit?

All three groups had similar answers to this question, providing clear motivations behind the purchase. B7 said “I work in wearable tech and have done a couple of shoemaking classes. Hacking shoes is hard. I thought this would give me a neat way to incorporate some electronics into sneakers.”. F2 said “I wanted to learn how a shoe is made and possibly make some shoes of my own. This was the easiest way in, although admittedly not the most representative way on how artisanal (or handmade) shoes are made.”. This was also summarized well by D5 “I was interested in the process of shoe making.”.

Interest in shoemaking, gaining new knowledge and integrating with their professional practice drove makers to engage with the toolkit. This shows that we reached our target audience and many different kinds of makers.

Where are your ONEDAY's now?

We wanted to understand if and how each of the makers made the shoes. Half (7) of the Basic kit makers admitted to not having made the kit; such as B11 “still incomplete in a box, but I want to do it!” or B8 “In the drawer, waiting for me to make them, I’m feeling ashamed...”. The other half did

make and wear the shoe exemplified by B1 “My Oneday’s are with my other shoes”. The Full kit respondents seem to be represented by F3 who said “My Oneday's are in active use!” Although F6 admitted that “My ONEDAY’s are in the trash. I loved creating them but they never really fit my foot and were uncomfortable to wear after a while.” The Deluxe kit makers seemed to have the best experience, this was expressed well by D4 “My ONEDAY’s are in my closet for me, (I can wear them to work) and my daughters’ are on her feet right now.”.

The summary analysis is the Basic group still has a strong desire to make and, as shown in the following questions, personalize their toolkit, but many had yet to start. Most Full kit makers succeeded in making and were still using the shoe, although one respondent expressed the need for more fit personalization (which they apparently did not do). The Nearly all the deluxe kit users made their shoes and had them still in active use. Also, the materials were holding up better than expected in the shoe kit design.

How did you personalize your ONEDAY's?

With this question we wanted to see how users engaged with personalization. The Full kit users were divided as shown by F3 saying “I inserted some padding inside to make them more comfortable.” and others like F2 saying “I was happy with the kit as is -no personalization.”. The Deluxe kit engaged with personalization in terms of material and color exemplified by D5 who said “I added worn, black leather from army surplus gaiters to the brown that I had selected from you.”. Half of the Basic group had not yet made the kit but had ideas B12 “I will personalize them by using a vegan material and a fitting color”, the half who did mostly made the shoe outside a few who engaged in some personalization such as B3 “I made my own design, only used the outline of the included design.”.

Personalization of color, material, form and style is seen in all three groups with the Deluxe group showing the most personalization as a group, the Full group being around half and a small number personalizing in the Basic group. The basic group spoke of how they would personalize on a conceptual level, but after two years had not engaged in the process. This shows that in co-creation platforms and UPPS, personalization can be found in co-manufacturing, and more



Figure 7 Photos of the Full kit shoes by discopenut, judithsterkenberg and jonnyjwhite on Instagram

important, designers can encourage personalization in co-manufacturing by designing space for it to happen. Additionally, personalization occurs more often when the user is presented with high quality tools and materials.

Would you make it again?

We asked if they would make the kit again in order to learn about the overall experience. Many Basic kit makers expressed disappointment yet hopeful resignation, B6 “I kind of want to but I feel a little bitter about the last one lol. The kit needs to have a bare minimum of more stuff.” This frustration of not being able to complete the kit was seen often in the makers of the Basic kit. One of the ones who did complete it said B1 “I would, but not now as they are still in good shape”. Many of the Full kit makers expressed a desire for better materials “I would like to have thinner more durable soles. Mine are broken from wear already” F4. The sentiment was shared by the Deluxe group. D2 “I might get another pair if the sole is black and the thread is black. Both of those components got dirty easily.” Others seemed to have mastered the kit saying D3 “I would rather learn how to make a leather shoe probably using a last (assuming it is possible without using specialized machinery). Perhaps starting from something simple like a “Clark” and building up to a proper looking smart shoe.” This is supported by D7 who said “Yes. Now that I know how to make them, I would go and start to do something more personalized.”

This question shows personalization is more prevalent when there are fine materials and tools involved. An interesting outlier in the results is user F1, who was the only Full kit user who didn’t make the kit, said F1 “I didn’t make them, but use the tools a lot!”. It also shows makers of all kinds respond well to co-manufacturing, but personalize more when presented with higher quality materials. The quality of the toolkit affects the choice to personalize a shoe despite what the user intends to do with the kit. The level of skill and craftsmanship of the user affects the likelihood of the user to personalize in co-manufacturing. Finally, in order to engage a user in personalization of the fit of the shoe, multiple iterations are required.

What kit would you recommend to someone else?

In order to know about the ideal kit, we asked the users what kit they would recommend to someone else with a series of choices:

1. Just the Soles.
2. Soles, Leather, Insoles, Shoelaces
3. Soles, Leather, Insoles, Shoelaces and tools
4. Soles, Leather, Insoles, Shoelaces and tools with precut leather
5. Fully constructed ONEDAY’s

The largest response for Basic, Full and Deluxe interviewees was category 3. Soles, Leather, Insoles, Shoelaces and tools. The Basic kit users had results in all five categories. The Full kit had a one person who responded “just the soles” or “A Fully constructed ONEDAY”. The Deluxe kit had one user category 1 and other who wanted category 4. When asked for comments, the Basic kit is represented by B5 “I just like the idea, the plan: I still think it’s really great and good for the environment because of little material displacement.”. B7 said “More digital files that could easily be sent to laser cutters would be really rad for this project.” The Deluxe group, at the other end of a spectrum, are represented by half who wanted more style patterns D3 “Create additional styles! That would be fun!” and the other half who wanted a complete accessory set D5 “I would like a similar set for leather bags and a leather belt”. The Full kit level is summarized well by F4 “For someone who wants to have special shoes yet lack of the creativity, it would be nice to show more creative examples for people to follow step by step and give instructions about shoe maintenance.”

The responses strongly indicate that the involved makers want a kit that has all the tools and materials, but that they want to do the bespoke processes of cutting, punching and sewing. Almost everyone who made the shoes wanted more personalization and options for themselves and others. A few users expressed the desire to engage in hybrid craftsmanship with digital files for the laser cutter. While we did offer these, it is obvious that they were not prevalent enough in the project (this sentiment was shared by three of the interviewed makers) and shows an interest in hybrid craft.



Figure 8 Photos of the Deluxe kit shoe by dreisbuyck, david.filar. and e_mcavoy on Instagram

CONCLUSIONS

There is a difference in personalizing while designing (co-design), or personalizing when making (co-manufacturing). Personalization is important to the social and psychological needs of users, as seen in the interviews and Instagram photos. HCI and TEI have long investigated the integration of technology as part of a product (prototype, demonstrator, artifact...). In Oneday, the technology is in the system and service needed to create a shoe. What results is a hybrid craft experience that opens up large opportunities for the user to personalize. We show that the public is willing to engage in a co-manufacturing of a project designed with technology.

There is an opportunity for designers, researchers, shoemakers, engineers, programmers computer scientists and others to explore the technology of designing and making a thing. The “computation” of HCI can occur in the process or service instead of in the artifact. We see opportunities for that computing to occur over the lifetime of an artifact in the form of use (wear & tear) and user experience in the Oneday systemic and service aspects

Co-manufacturing can result in more personalization than co-design. In the explored Oneday case, the expectation was users who co-design the project with their own materials, tools and ideas would result in greater personalization. This was confirmed in the initial survey. The users who backed the basic kit reported intent to redesign the shoe. Then on a scale up to the Deluxe kit, backers reported they intended to make the template shoe. The Basic toolkit was more open and required co-design. The openness and endless possibilities of the basic kit results in many concepts but inhibits users from developing past the concept into a making phase. The Premium toolkit was a more closed system that required only co-manufacturing. Users respond well to co-manufacturing, but also personalized more when provided higher quality materials and tools at a higher cost. The cost of the kit may have motivated the users to complete making the kit. This was counter to our expectation and survey result that a lower cost and openness of the basic kit would result in more people personalizing with the shoe kit.

Users are more likely to personalize and use a research product when engaging in a hybrid crafting process for co-manufacturing when fine materials and tools are provided.

Designing a toolkit to fulfill the specific needs of co-manufacturing to understand personalization is challenging. Designing for co-manufacturing requires a common archetype that can be personalized not only to the individual but to a city, neighborhood and/or time period. Personalization via co-manufacturing works well with simple and classic design. Additionally, the two year process and research product approach were key to this research. Only by waiting did it become apparent that the initial intention to personalize is often not always completed with action. Research Products changed our idea of the user into a co-use situation, the traditional user is using the shoe, the design researcher is using the data from the shoe and the social/psychological experience with the shoe in design, making and use. It was important to recognize this co-use.

LIMITATIONS AND FUTURE WORK

This work only looks at sneakers as the time limitation of eight hours made other shoe styles difficult. There is an opportunity to explore other shoe styles such as high heels, dress, and sport shoes with longer time limits. The limitations on Kickstarter surveys were heavier than expected and more investigation into the skills of the users and motivations in action might reveal even deeper motivations. Also, backers previous experiences with Kickstarter might have influence on their decision process which we could not look at. Many users expressed that they would personalize more a second time using the kit.

We see the kit being used in other interesting ways. For example, shoe designer Rueben Lekkerkerker launched a sustainable shoe collection Ruit [25] with the kit and a homeless shelter continues to use the kit to develop self worth. The toolkit appears to have social impact in ways we had not considered. We invite other researcher to use the toolkit and help explore personalization.

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