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Project : Crafting Stories, Promoting diversity
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Abstract

Print and Press is designed to give back the process to graphic designers. Nowadays when a graphic design is made, this is done on a computer. Afterwards it has to be made physical somehow and a printer is usually the go to option because it is available and cheap. What is often forgotten however is how limiting using a printer is (limited paper options, nearly non-existent ink choices).

Print and Press aims to let anyone experiment with and iterate their graphic designs on any medium: wood, paper, leather, shirts, functionally everything.

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Objective

Print and Press is a project in Wearable Senses which is called “Craft Stories, Promoting diversity”. The project is about how in the past decades crafts have fallen out of favour and have become overlooked. A lot of people don’t even think about how their products are made anymore, and may even forget how they are made at all.

Craft stories aims to take these crafts and put them on a pedestal again. Not by having a archaic or nostalgic look at them, but by highlighting their daily relevance using modern technologies.

A big personal interest of mine is graphical design, but it came to me that the way a design is printed has never received my full interest. The more I thought about it, the more I realised that it was strange that the process, which is digital, and the medium, which is physical, are separated immensely.

I decided to find out what traditional printing techniques have to offer us today and how they could reinforce the overall process of creating graphic work. How can anyone print without having any restrictions, without having to spend hundreds or thousands of Euros?



A type for my personal business cards



Business cards made during the exploration

Exploration

Printing

When starting the exploration the first order of business was finding out how the work closest to me is made. So I contacted the printer of SLANG magazine¹, a magazine I was working for on at the time. This was Thijs Wielinga of Dutch Quality Printing.

Thijs works in Lijnden, near Amsterdam. He runs a business called Dutch Quality Printing, which mainly prints and processes digital work. One of the most striking things was that what many would assume is some kind of pressing is actually printing. Thijs still does some offset pressing sometimes (as he was trained as an offset printer) but realistically, nearly anything is print.

Thijs talked about how the radical change to printing in the last few decades. Printing used to be a slow process for which a lot of time was to be reserved because of the large amount of craftsmanship involved. Recently the direction has been more towards it being quick and easy, taking down the quality of print work and increasing the speed by introducing digital printing.

Throughout the years digital printing massively improved but the real hand of an artists is still missing. A lot of Thijs's costumers just send him a PDF file and don't even consider the implications of certain inks on paper or the effect of different textures and weights on a booklet. The connection between creating graphical work and making it physical seems to have become arbitrary, whatever is quickest and cheapest is basically considered the only option.

¹ <http://slangmagazine.nl>

Pressing

After modern printing techniques, the next logical step was jumping back in time and look at traditional pressing techniques. Most well known in relief-printing or letter pressing, in which lead letters are set, inked and then pressed into paper.

Barely any commercial companies still use pressing in the traditional sense, but a lot of printing companies, surprisingly, still have old letterpresses. They still use these to corrugate and die-cut, purely because of the sheer power these machines offer over most modern machines. Their simplicity still made them a valuable tool in modern printing, they are reliable and printers know exactly what to expect from them. They have learned how these machines work and act in different scenarios.

It was remarkable how these relatively old machines had survived for so long without showing any sense of wear or give. They obviously require their share of maintenance, but they were clearly built to last over a century, being made of nothing but cast and machined metal.

So if all these machines are still around and perfectly working (and relatively simple to repair) why are they barely used anymore, has relief-printing aged so much that it is in no way relevant nowadays?

De Baaierd

Even though relief-printing is rare in the Netherlands, it became apparent that it was absolutely necessary to find someone who still did. Luckily there still is a tiny community of printers who still use and explore letter-pressing, they are called “Drukwerk in de Marge”¹. Silvia Zwaaneveldt is the secretary of the community, and runs “de Baaierd” a small private printing house in Leiden. She has a platen press, a proofing press and an impressive collection of fonts, inks

¹ <http://drukwerkindemarge.org>



Platen Press in “De Baaierd”



Proofing Press and type cases in “De Baaierd”



More of the collection of "De Baaierd"

and engravings. She loves traditional printing and sets out to share her process.

Silvia talked about what relief-printing meant to her, she loved the direct connection of it, the hands on approach of making graphical work. After studying she started collecting everything related to printing, wooden letters, lead letters, lino cuts, inks and also the two presses.

Silvia talked about the huge changes printing has gone through in the past few decades. Ever since the printing press was invented around 500 years ago technologies moved relatively little, letters were arranged in a window, tightened, inked and pressed into a medium. But after hundreds of years, in the second half of the 20th century, offset printing came in.

Offset printing is a process in which an image is developed onto a plate, then all non-image is made wet, so the oil based ink will settle on the image part of the plate. After which the ink is transferred to a rubber sheet and then to the medium. Companies were quick to jump on it because the process involved a lot less moving parts, which sped up printing. Selling lead letterpress letters was even subsidised in the Netherlands to promote offset printing, which can attribute to the fact that there is so little letter-pressing in the Netherlands nowadays.

Then, towards the end of the 20th century, digital print started improving and becoming a viable option for commercial print over offset printing. Even though the quality and speed of digital print still lags behind offset printing, the ease of use makes it a very popular option these days. But the danger is that craftsmanship becomes lost. When printing you'll have to use what the printer offers, a very limited range of inks, and paper that can fit through the paper feeder. Not considering how the physical print comes to be can become a problem, it advocates a decreased connection between the print and the designer.

Drukkerij Mostert

Silvia works in the same city as one of the few still-standing commercial printers still using relief-printing and letter-pressing techniques. This printer is “Drukkerij Mostert”¹, run by Frank Turenhout and Hans Dessen.

Mostert has some impressive machines. Next to an enormous Heidelberg offset press they have a platen press that automatically feeds paper, a big Mercedes cylinder press, which feeds paper using compressed air and a lot of moving parts and an Intertype, which is a device that can cast entire sentences to be pressed in lead.

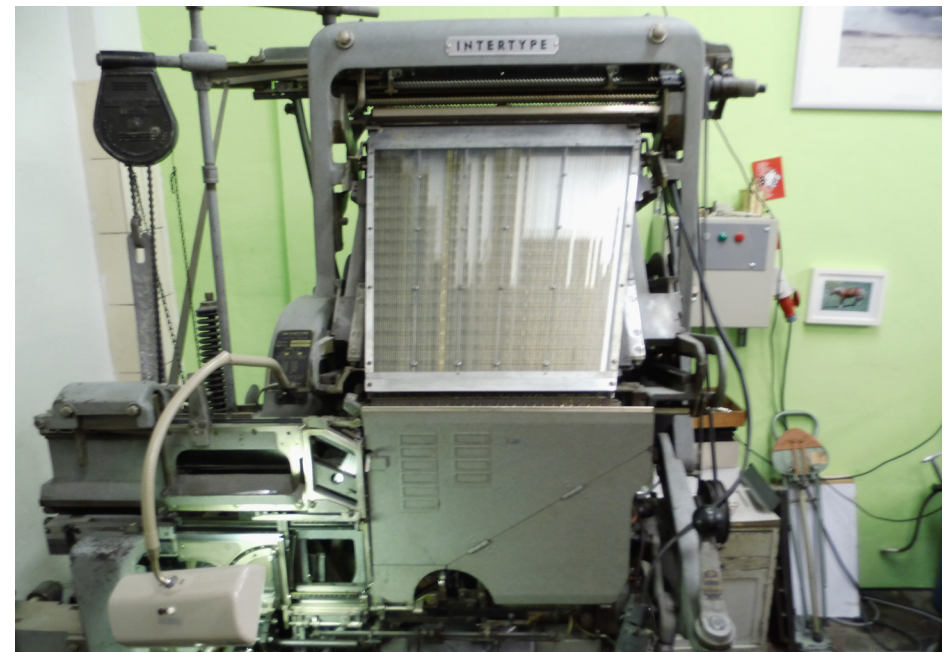
Hans and Frank are among the last printers still actively involving letter-pressing in their process. By knowing the machines, their paper, their ink and everything involved inside and out they can make prints that would otherwise be impossible to make. Even though the relief-printing is not so much their bread and butter as it is a hobby they do get worldwide orders for special marginal editions of booklets and poems. Especially artists consider the effect of a printing press to be invaluable to graphical and typographic work and drukkerij Mostert loves to propagate the legacy that these machines hold.

Every press in drukkerij Mostert has its own story, none of the presses were bought new, they have to be brought in by special graphical moving companies. Mostert has a vision that reaches far beyond quick and cheap print work, they want to establish a connection between the creator and his work by physically considering every part of it. A true emotional bond between maker and medium is made at drukkerij Mostert.

¹ <http://drukkerijmostert.nl>



Mercedes cylinder press at drukkerij Mostert



Intertype at drukkerij Mostert

Design

It was strange how the effect of a printing press are so strong, yet so overlooked in everyday life. How many people have even seen a printing press in their life, let alone used? The problem, as always, is cost and space. Printing presses have a huge footprint, with their large metal frames and levers. But their price is a real obstacle, if someone is only interested in experimenting, or not sure if letter-pressing is their thing, they will probably not be looking to spend hundreds of Euros (plus costs to get a press weighing hundreds of kilos home!). Getting letters was also a problem, nearly none are available anymore today, complete fonts can consist out of dozens of cases, filled with lead. The goal was to reduce costs and size, make it accessible to anyone.

Press

The press would basically always consist out of three parts, to keep it as simple as possible. 1). A bottom plate, a flat strong plate on which everything can be placed. 2). A plate to hold the type, which would be inked to transfer to the medium. 3). A means of applying pressure to the type, pressing the medium into it to transfer the ink evenly.

Multiple designs were considered but it ultimately boiled down to three:

- 1). A type of proofing printer. It would be an assemblage that holds the type with a cylinder rolling over it. One would press the cylinder down by hand, while rolling it over the type.

- 2). A type of letterpress, an incredibly simple press that consists out of two plates, pressing into each other.

- 3). A lino press, a set of rollers above each other that turn opposite ways. The paper and type would be fed through them simultaneously like a pasta machine

Eventually the second option was chosen. One of the main problems was finding suitable cylinders, they had to be perfectly round and heavy. It would add a lot of need for precision, which not only adds cost, but also goes against my goal of making a simple, every man's letterpress.

The press had to be simple, so I decided to exclusively use materials that would be ready to use to anyone, most of them available at any hardware store. The press would mainly consist out of wood, strong but still a bit flexible. However the parts that connect the bottom and top of the press would have to be extra strong, so they would have to be made out of metal, regular metal profiles available at any hardware store.

The last part would be something to apply pressure, this could of course be done by hand, but this would not allow for deep pressing or an even pressure distribution. The second option would be some kind of screw with a handle, which was not readily available. Eventually a car jack was chosen. It is able to produce a lot of pressure very reliably. Using bottle jacks to drive a press had been done before, so using plans from these presses the design was made.

To make the top and bottom plate hardwood plywood was used. Even though wood is relatively expensive, the hardness and smoothness of the wood makes it very suitable. The top and bottom support were made out of wood beams. Finally an acrylic plate was made to be used as a sliding board, so the type and medium can be slid into and out of the press easily.

The press can be seen being assembled and used in this video:
<http://youtu.be/CWtyJ6TRi14>

Here is a parts list of the letterpress:

- 1x Car Jack
- 2x 40x40x2cm Multiplex
- 1x 30x30x2cm Multiplex
- 4x 40x4.4x6.9cm Beam
- 2x 45x4.4x6.9cm Beam
- 4x 60cm 90 degree slotted profile
- 8x 12.7cm bolts
- 16x nuts
- 1x 4 armed elastic band with hooks
- 4x bracket
- 1x 40x40cm acrylic plate



All parts of the press



The assembled press

Type

Because having lead letters was not an option because of the scarcity, weight and cost a new kind of type had to be come up with. After researching some other small scale printing techniques the "Letterproeftuin"¹ was contacted. They made the smallest printing company², a tiny, tiny printing press and screen printer. On the pictures on their website they used mdf letters, but they recommended to use acrylic or perspex, because it is a hard material that does not interact with the ink and therefore prints all of it.

Thanks to FabLab brainport³ a nice neutral font was laser cut out of acrylic. Numbers, punctuation marks, upper- and lowercase letters were cut twice at font size 100. A simple box to hold all the letters was also cut from mdf, all letters fit in it at alphabetical order.

The letters are arranged on a small acrylic plate using double sided tape, so they can be easily put on and taken off. When a design is satisfactory a thin layer of ink is rolled on using a rubber roller.

1 <http://letterproeftuin.com>
2 <http://www.letterproeftuin.com/letterproeftuin-smallest-printing-company.html>
3 <http://fablabbrainport.nl/>



A close up of the letters and numbers in their box



One of the first prints made with the press



Examples of prints made using the press.

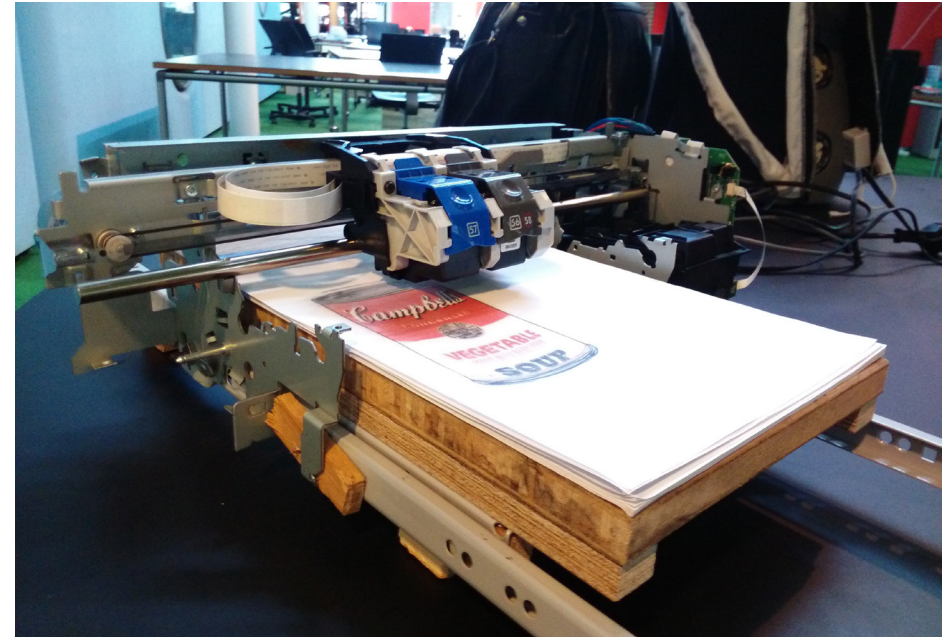
Print

After discussing the press with experts it became apparent that, while the press is appealing to a certain crowd of people it missed a concrete application, it missed a destination. The danger of the press is only employing a nostalgic view at graphic design. While traditional printing does offer some advantages over digital printing, digital printing surely does have it's share of advantages over traditional printing. Mainly the ability to print long texts without having to set them by hand, and quickly being able to print full colour images.

Just throwing a printer in the mix wouldn't work, it would defeat the entire point of the project. It would reintroduce the problem of not being able to choose material and dislodge the entire process. The printer has to reinforce the direct creative process, not replace it. Nowadays a graphical designer would just create the entire design on a computer, but the digital printing part of this project should advocate an iterative approach.

The solution was to create a printer that could print on any material that still is affordable and simple. It didn't make sense to reinvent the wheel to include digital printing as it would make the process far more complex. It was decided to take out everything of a printer except for the printing head and it's assembly. Instead of using a motor to feed paper, there would be a motor to move the entire printing assembly over the medium. For the prototype however, the movement of the assembly was done by hand, providing even more control over the final print, but inhibiting precision

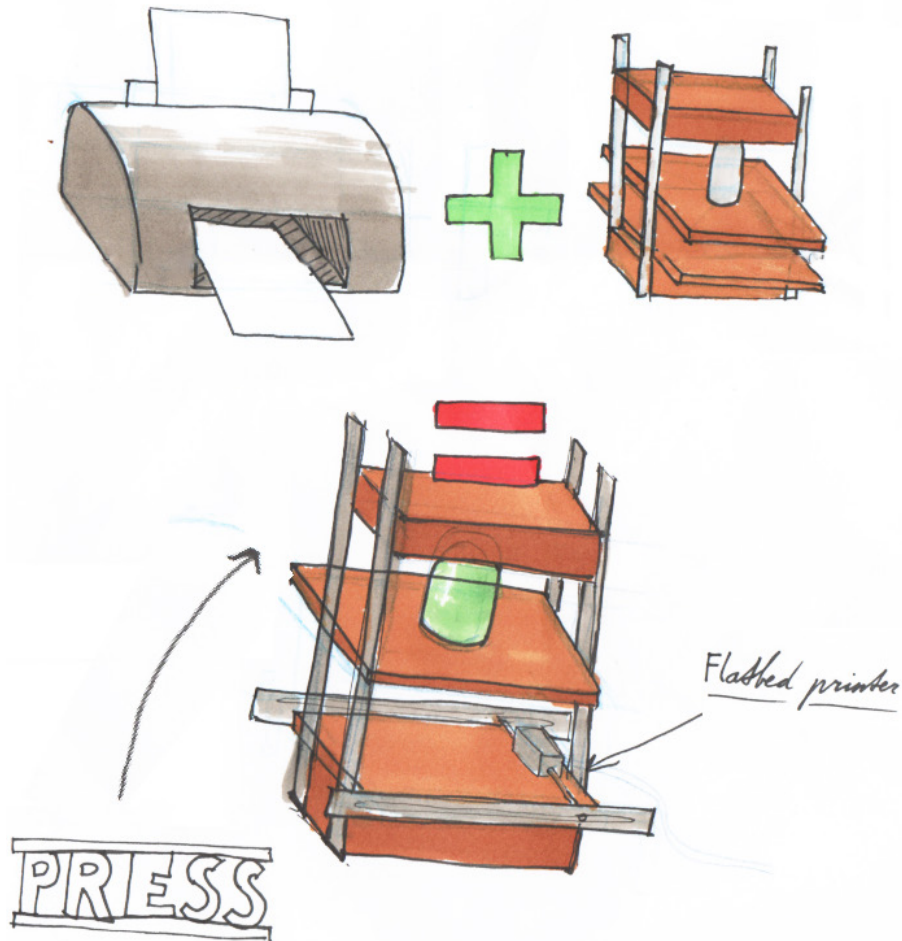
The most complicated task was fooling the printer into thinking there is paper in the feeder, because the printer's software is so locked up, the only way to do this was to manually override the sensors. After much trial and error the printer worked and was put onto rails to roll over a plate on which any medium can be placed. The printer allows for not only printing any type of paper, but also shirts, fabric and leather.



The printer in action



Paper and fabric printed using the printer



An early sketch of the Print and Press prototype

Final Design

In the final design all aspects of the design had to come together, traditional and digital technologies have to work together to create a machine that accommodates a rich creative process and a real emotional bond with the machine as well as the prints made in it. The machine is simply called “Print and Press” because essentially it is made out of two machines with their own personality and uses that work together to provide a rich interaction.

In the final design the printer is placed under the pressure plate of the press. The printer can move over the medium and the pressure plate can press without ever having to move the medium. This will allow for a consistent, reproducible, result, making the Print and Press a creative as well as a producing tool.

Destination

Print and Press is supposed to be a simple tool for people interested in graphic work or small companies looking to have their own equipment to experiment with and produce their own graphic work without the limitations some modern technologies might put upon them, but still benefiting from what they do have to offer.

Ideally Print and Press would be a kit consisting out of the more complicated parts (printer assembly, pressure mechanism) and simple instructions on how to use materials available at any hardware store to create a personal Print and Press. This is both to make Print and Press even more easily available, but also to make it as simple as possible. If one would want they could create a bare-bones version of it, strictly following the instructions. But if one would want to add more complex systems, they’ll be able to. It enables a lot of possibilities without complicating the base product.



The Print and Press in use

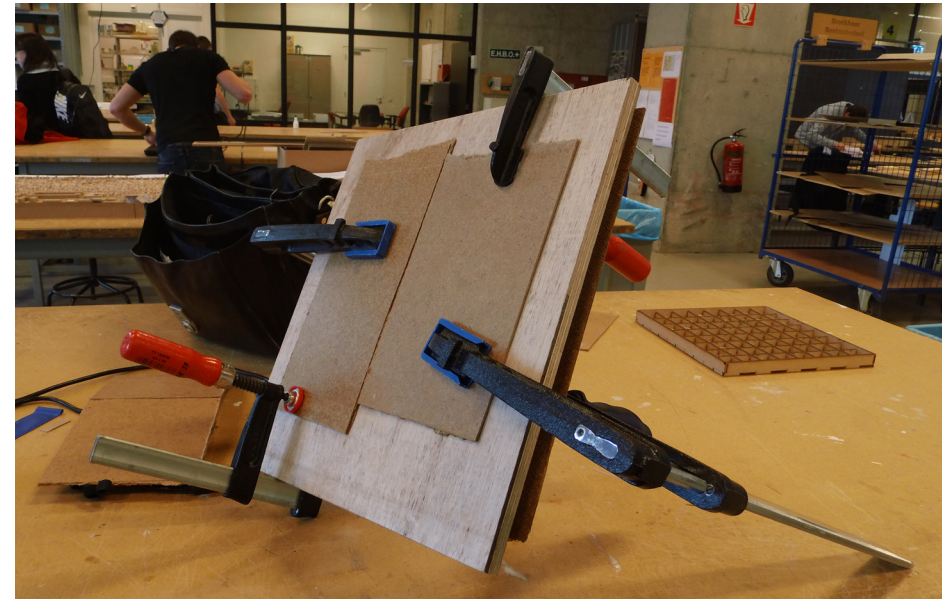
Future

The next order of action on Print and Press is functionally putting the Printer and the Press together. At this point the jack does not provide enough clearance for the printer to comfortably fit under it.

Next a system has to be added that makes the printer more precise, either by adding a lever to winch the printer over the medium (making it easier to maintain constant speed) or adding a stepper motor to move it.

It is essential to figure out what a Print and Press kit should contain and how these parts can be made as simple and cheaply as possible. For example, would it be viable to recycle old printers (possibly with defect paper feeds) to become the printer part? Should the kit include a font to press with, should they be sold separately or should everyone cut their own letters all the time?

Finally when the definite parts are made detailed instructions should be made to be shipped with the kits.



Putting together Print and Press will only require a drill, a saw, wood glue and some clamps!



All parts of the press in a compact package

Conclusion

The exploration of Print and Press really revealed the value of Crafting Stories. Modern technologies certainly aren't bad, but if we stop being critical of our means of production we run the risk of losing touch with our work.

Creating graphical work nowadays happens on a computer, it is finished on the computer. Then it has to be made physical somehow and we usually elect to use the thin paper and limited ink the printer offers us. If we do want to print on canvas or shirts we will have to send it away, at which point we are not present when work is printed, distancing us from our work and introducing the possibility of ending up with 150 shirts that are not as they are supposed to be. The other option is buying a shirt printer or a printing press ourselves, costing hundreds, if not thousands of Euros.

Using modern day technology in a smart way can help give back the traditional ways of working at much lower costs and faster speeds. Print and Press is an example of this, it not only incorporates the history and nostalgia of letter pressing, it uses it to establish a direct emotional link towards work made. While doing this Print and Press does not forget digital technologies, but uses them in an unconventional way to bring the production and product close to each other again.

All of this is contained within an affordable, easy to use package. While the project still requires some work to become an actual product, it has a clear direction and could be a very interesting to actually land on the store shelves (or kickstarter webpages).

Personal Reflection

When I saw the Crafting Stories project I immediately knew I wanted to take this project. Traditional crafts have always had my interest because of the emotional bond a person can have with what they are working on. I think it is very noble to spend time and effort into learning how to create.

What Crafting Stories made me realise was the enormous effect a direct way of working can have on a process. When I realised how disconnected the process of creating graphical work was and was able to attack this problem, it was great to see how people immediately understood what Print and Press was doing. Even though this problem seems to be hidden away, the mere sight of a press and a crazy printer assembly was able to make people think about what these machines have to offer compared to modern, disconnected, processes.

The most important thing that Crafting Stories taught me was not to forcibly reintroduce traditional technologies, but to consider the advantages that the methods had and see how they still relate to today's world. These technologies might have disappeared because they simply were inferior, but they might also (as is the case with relief printing in my opinion) have disappeared due to being covered up with innovation upon innovation, in which the core of the process may be lost.

This semester's project was my first individual project in industrial design. I brainstormed individually and decided the direction of the project by myself. But despite this individual stance on leading the project I am absolutely convinced that it is crucial to include other points of view. It is easy to just sit down and come up with theories yourself, or to start from absolutely nothing, but including experts and more knowledgeable people in both the exploration and design phase can both speed the process and make it considerably more reliable.

I think Craft Stories was a very good way to run my first individual project, even though it sometimes was hard to keep the project up to speed I am satisfied with the work I delivered. I can say I have done a project of which I am truly proud. I am sure that I will use the product of this project for my own creative process and I even received some serious interest from visitors at the demo day with the advice to make this into a real product.

I loved the freedom Crafting Stories gave me to pursue my own interest. While providing a clear objective to pursue I was very free in choosing my own direction. Though initially I got a better understanding of a medium very dear to me. The project provides a nice extension of my vision on design and was a great opportunity for me to develop myself in an interesting context on in an exploration as well as a designing context.

While I still prefer working in a team, it is obviously important to also be able to work on an individual level, which was a great experience and this project might have been one of the best ways to be introduced to it.

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All coaches and experts of the Wearable Senses space

