Tactile Storytelling

Philipp Meyer / May 2013

A different kind of library

In my final project I wanted to find out if it's possible to create a short comic that is readable for people without eyesight. My plan was to develop some kind of tactile story on paper. The reader should be able to follow and explore the story through touching the paper. The idea started with a simple sketch and came to my mind because the comic-medium depends on visual information. I saw it as a challenge and a chance to get in contact with visually impaired people to fathom the possibilities of tactile storytelling.

I started my project by going to a library for people with reading disabilities called *Nota (Nationalbibliotek for mennesker med læsevanskeligheder)*. I expected to find a public library where people sit and read braille books. That was not the case. *Nota* is an organization that develops online applications, prints braille books and helps people with reading disabilities to read; apart from renting books.

I ended up talking to *Naja Wulff Mottelson*, she is responsible for the coordination of research projects. I explained her my idea and *Nota* offered me a project contract, that would give me the possibility to get in

touch with blind people and use *Nota's* utilities. As it turned out, signing this contract was an important step towards the first comic made especially for blind people.

Getting in touch

During my research I came across a reasonable amount of papers and a book that gave me a good introduction into the topic of tactile representations and the perception of people who are born blind. There are as expected many things that one has to take in consideration when creating tactile images for blind people. I hereby want to outline some of my findings.

Objects need to be drawn simple and clear. All unnecessary clutter should be removed to make the tactile image easy to understand. There should be no shadows included in the image. It's best not to draw the objects in perspective but either from front, side or the top. It is however possible to make the three-dimensionality understandable on paper by showing more than one view. The perception of a tactile image is, in any case, different from a visual image.

»The sighted person sees the whole picture, as well as the details, at once, and can make the mental leap as to understanding what the picture is about. When touching a tactile picture it is the other way around. First the details are felt, then the whole picture. Piece by piece and section by section, the picture comes together until at last there is an understanding of the whole picture. However, in order to fully understand a tactile picture - if you are not an experienced picture reader – you must know what the picture represents.«[1]

[1] Beatrice Christensen Sköld (2007). Picture books accessible to blind and visually impaired children.

homepage.univie.ac.at/moritz.neumueller/artecontacto/materials/156-Skoeld-en.pdf

Tactile images have to have a certain size as well. They're not supposed to be to big because then they can't be perceived as a whole anymore. They're not supposed to be too small because then they're to difficult to feel.

» […] *The finger can only perceive the difference between a few textures. A relief image containing several different textures can be very hard to interpret. This means that we have just a limited number of symbols that can be used in tactile images.«*[2]

[2] Yvonne Eriksson(1999). How to make tactile pictures understandable to the blind reader.

archive.ifla.org/IV/ifla65/65ye-e.htm

The main target group of tactile books are children ranging from 1 to 10 years of age. These books can for example help children in regards of language development. Often there are adults reading the books with the

children and explain the object along. *»In this way the child is trained to look at a picture, learn the name of the depicted object and understand the relationship between the picture and the real object.«*[3]

I only found a few tactile books for adults. One example is the city guide *Getting in touch with Stockholm* published in 1998 by TBP. It *» […] suggests a series of walks around the central part of Stockholm. It focuses on sculptures and those parts of buildings, which may be interesting to touch for persons with severe visual impediments.«*[4]

I quickly came to the conclusion that I want to create a story that is more targeted towards adults. To get a sense and a better understanding I talked to blind people very early in the project phase. The first blind person I interviewed was *Michael Drud*. I asked him various questions related to tactile books and general perception. *Michael* was born blind and told me that even though he's very interested in the visual world tactile *illustrations* wouldn't be of much interest for *born-blind* people and maybe more interesting for people with *acquired sight loss*. They connect the tactile illustrations to the objects they saw earlier in their life. The interview took an hour and gave me many important and inspiring insights.

The five senses

I realized that doing a comic by simply creating a tactile scene/ environment that can be touched doesn't seem quite right. It would be a poor transformation of the comic medium for a blind reader.

I analyzed the panel which is totally based on sight. When a reader reads a comic he is, most of the time, in a third person perspective. Seeing what is going on from a distant viewpoint.

A person who is unable to see perceives the world more through other senses like touching, hearing, smelling. I started thinking about how to translate the picture layer of a comic sensibly for the blind community and came to the conclusion that the sense, most comparable to seeing, is hearing. We can hear objects in the distance as we can see objects that are far away. Nevertheless using audio to translate a scene would be an audio-play and not a comic. If I would use braille to describe the audio one to one on paper I would end up writing a book. My idea was then to change the normally square panel into a round panel. A first person perspective, so to speak. Through a 360° space around the panel I would be able to mimic the position from where the audio comes from by

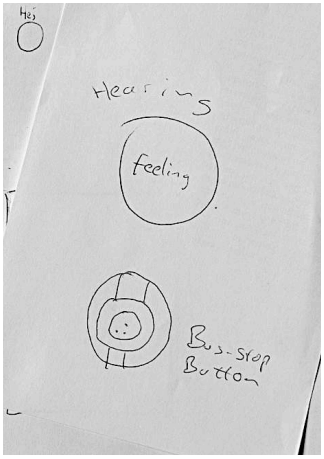
[3] Beatrice Christensen Sköld (2007). Picture books accessible to blind and visually impaired children.

homepage.univie.ac.at/moritz.neumueller/artecontacto/materials/156-Skoeld-en.pdf

[4] tpb.se/english/braille/tactile_picture_books/

placing the braille text on the respective place. To enrich the reading-experience furthermore I thought of placing a tactile representation of the scene into the round panel. For example when I want the scene to be a bus I emboss a stop-button that you find in the bus, if I want the scene to be an elevator I emboss the buttons one can find in an elevator into the page.

Somehow this idea didn't feel right; not adequate and too far away from the comic-medium. It wouldn't enable me to use the strengths of the medium.



Bus-stop-button sketch

From circles to life

I started again from scratch and tried to figure out if I could write a story that is using *regular* comic-panels. I wanted to use comic techniques and the users imagination to achieve my goal. I wanted to let the medium *do the work*. During the following days I experimented with storytelling through simple shapes and forms. With and without text. I always wanted to see how graphically simplified a story can be, without losing meaning. The result is a short prototypical story called *life*.

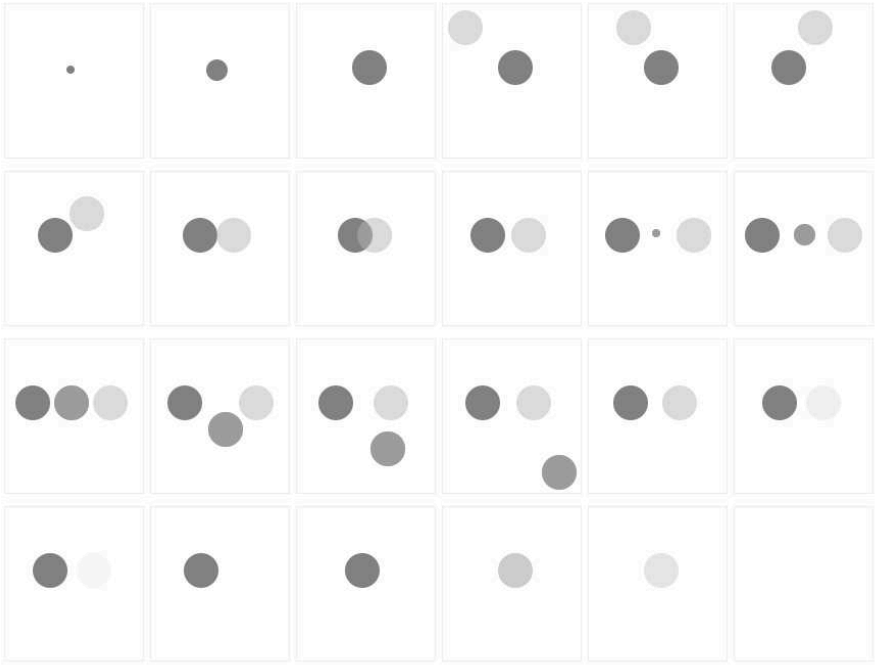
It is visually reduced to the essential. It does not rely on text and is therefore even understandable for readers who are unable to read braille. The reader understands and interprets the story through the title and positioning and size change of simple circles. I based the story on the theme of love as this being a topic that is understood by almost every human being.

After I drew the story on paper I created a digital version and send a link with the title of the story to various people between 22 and 60 years of age. The results were very promising. Everybody understood the story immediately without further explanation. I think this is quite remarkable and shows how powerful the comic medium actually is. Out of simple circles carefully positioned in panels people create a love story. Not only that everybody understood the story, people even made interesting interpretations of it and noticed things I haven't even though of while creating it. The words used to describe the story were not *circles* but *people*, *child* or *death*.

»In the beginning they're checking each other out. Then they get a child which grows up and leaves home, it detaches from the family. Then they're some years together but not as close as they were in the beginning. Then one gets ill and dies, the same happens to the other one as well.« Elina

»The end is a bit sad.« Christopher

»When I saw the first one fading out I thought about splitting up. On the second one I though about death.« Sumi



Digital version. A semi-interactive adaption is available on the project website.

www.hallo.pm/life

While I was creating the tactile version of the story I came back to the digital version every now and then. I added some interactivity to it. On the project website a semi-interactive adaption is available. The first version came without colors to keep gender neutrality. Now the user can change the colors randomly by double-clicking the circles. Each of the first two characters has an opacity of 50%. The child is technically a mixture of the two characters. The first two characters are placed on top of each other to create the child's color. For fun I made the characters to be movable as well. That way every visitor was able to create it's own little story. As the digital version not being the main focus, I left it at this stage, without adding a profound interactive toolset. In any case, that is maybe not too bad as often limitations lead to more creative outcomes.

The first tactile comic

I was very happy with the result and therefore started to create various tactile prototypes. Here the contract with *Nota* turned out to be very helpful again. I could use a special printer that embosses paper. After adjusting the digital version of the comic for the printer I printed a version that I could finally show to *Michael*. I was exited, nervous and

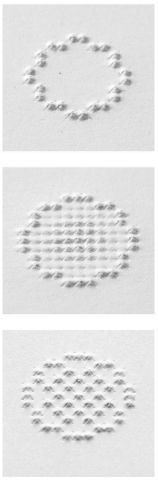
curious to see if the concept of panels and the whole story works for blind readers as well.

It did. According to my research *Michael* was the first person who ever read a tactile comic. A story that is told only through tactile representations without the use of text. The feedback was very positive. In the following weeks I refined the prototype and made the different shapes as clear to understand and recognizable as possible. I used a special software provided with the printer for this process. I was able to view and design directly underlying the same grid that the printer uses. Due to the actual physical limitations of the grid that the printer needs to operate I was not able to emboss perfectly round circles. The printers resolution is 20DPI and therefore comparable to the few pixels of an old computer screen. Old computer graphics actually helped me to find the best pixel based version of a circle. I experimented with different circle *fillings* from very rough structures to softer ones.

The first tactile prototype

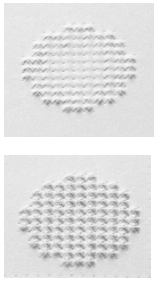
The printer is capable of embossing in 8 different heights. I use different heights for the content and the panels. The height of the filled circle gets lower towards the center of the circle. That way I achieve a softer structure, the circle feels nicer opposing to a circle with an equal height throughout. The changing embossing height is used in the end for the fade-out of the two circles as well. While I was testing the comic with sighted readers I realized that the filled circle with different heights is easier to distinguish from the unfilled circle by only touching it and not looking at it. Somehow the focus moves to different aspects of the circle. When touching it while sighted readers were looking at it they were more concentrating towards the filling and found it harder to distinguish. By touching it without looking, the focus went towards the contour. It was distinguishable.

The first prototype told a shorter version of the story on a single sheet of paper. The final story consists 24 panels and didn't fit on a single paper. I could either increase the size of the paper or think about ways to tell the story in a smaller format, on several pages. The second prototype was a hand-bound book. Usually braille books are embossed on both sides of the paper through indention. If only one side of the paper is embossed, then that would be the page on the right. Most blind readers only read the right pages, yet the embossed circles left a tactile structure on the backside – regular braille dots are so small in radius that the back side of the paper doesn't have a confusing structure. Some blind readers started reading the left pages as well which was of course not intended. For sighted readers this structure was to some extend confusing too, as sighted readers are used to read left and right pages in a book. The solution was to use a folding technique producing a *leporello*. That way the reader only feels or sees the front pages and never encounters back sides.

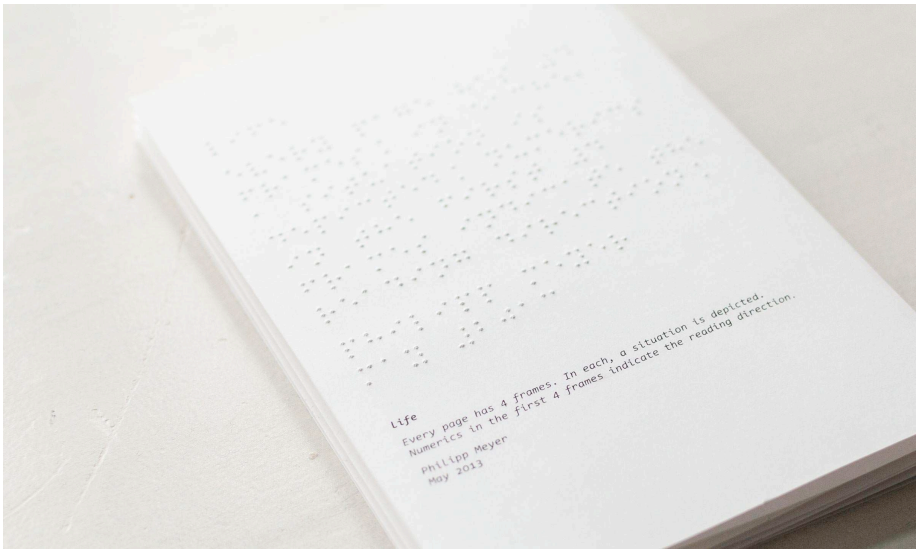


Circle iterations

With the refined prototype I went to *IBOS (Danmarks Nationale Kompetence- og Rehabiliteringscenter)*. There I was able to get in contact with *Jette Friis* who coordinated further meetings with blind readers. After more reading sessions I got very helpful insight into how blind readers read the story. I adjusted the height of the panels to make them easier to feel and more helpful as a guide. In the first four panels I added panel-numbers from one to four which explain the reading direction for readers who get in contact with a comic for the first time in their life. None of the blind readers had any trouble feeling the different shapes. Yet some didn't connect the title and the story. I still wanted the readers to interpret the story in their way, to give some introduction I added the following short text on the front-page. »*Every page has 4 frames. A situation is depicted in every frame. Numerics in the first 4 frames indicate the reading direction.*« It's embossed in braille and printed in latin script.



Variable and constant height



Front-page of the final book

I hereby point out that I don't know if this is the best or only way to create a tactile comic and if this comic works for every blind reader. It was an experiment inspired by the interviews with *Michael* and the feedback I got from him and the other readers. Time will tell if tactile comics will be a form of storytelling in the future.

Last page of the final book

Conclusion

I want to thank *Michael*, *Naja* and the rest of the team at *Nota* for their great help. Furthermore I want to thank *Jette* and the readers at *Ibos*. Another big thanks goes to *Jakob* and *Gunnar* for holding the course.

This project was definitely the most challenging I ever created – yet the most rewarding as well. I will never forget the day when *Michael* read the tactile comic for the first time, experiencing a medium that did not exist in that form before. On that day I realized that it is possible to tell a story – without ink, text or sound – that comes to life through imagination.