

# GEARFEED

A tangible way to filter your Facebook Feed and find back what you were looking for.  
An application of Tangible Thinking.

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## Course

Tangible and Embodied Interaction

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# Part I: Diary Exercise

## Moos van der Bijl

### **Collaboration: working in the garage**

The garage space is something where I come a lot since I can remember, not only to get something, however also to work on some projects and repair small things. This often invites me to help him with what he's doing as well as vice versa, when I'm working on a project he often wants to help.



### **Situatedness: glass**

The state of a glass changes the interaction with the product. When you want to drink something, you get the glass out of the cabinet. This means that the glass is clean, however when you drank out of the glass you put it in the dishwasher. This means that the glass is dirty, since you drank out of it and it needs to be cleaned.



### **Tangible Thinking: a game of chess**

When playing a game of chess a player doesn't immediately shift one of his chess pieces. He thinks about what the next step of the other player could be and adjusts his game to that strategy. Both player are constantly thinking about what the other player is going to do and what they need to do as their next step.



### **Space-Multiplexing: driving a car**

When driving a car multiple different interactions are needed. One has to steer, control the pedals as well as shifting gears. Each part of the task has its own specific interaction and some of these interactions have to be done simultaneously. These multiple parts create parallel interaction to fulfill the entire task.



### **Strong-Specificness: a key**

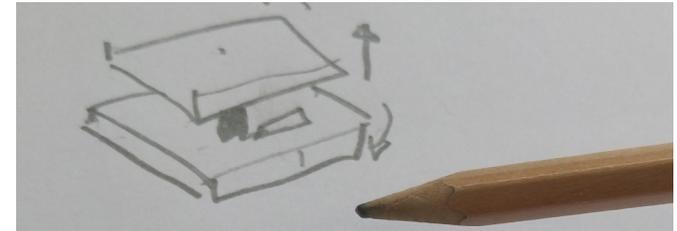
When holding and looking at a key, one can immediately see that it has its own form and feel. By having this specific form and thus its iconicity, people immediately know how to interact with it. A key has only one purpose: locking or unlocking a door. Most of the time one door can only be locked or unlocked with one key.



### **Sander van Eck**

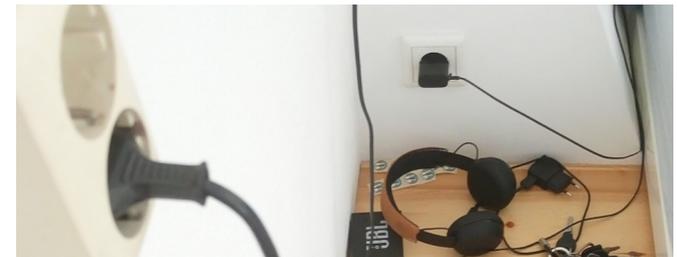
#### **Collaboration: sketching**

During a project meeting the things I was trying to communicate to my group members wasn't as clear to them as it was to me. Sketching it made it possible to communicate properly but also for my group members to add upon my sketches.



#### **Situatedness: sockets**

I found that due to the locations of the sockets in my room I always find myself charging my devices like speakers, headphones and especially my phone as the sockets are also close to my bed in the same little corner. If they would have been in another place this nightstand wouldn't be used the same.



#### **Tangible Thinking: playing the guitar and piano**

Whilst I was playing guitar and my piano I now noticed that this was a good example of tangible thinking. This is because I got direct feedback when I played something if I played it right. The interactions with these devices were also dependant on my muscle memory of those interactions.



#### **Space-Multiplexing: cooking**

When cooking I noticed that due limitations in space I had to interact with different pots and the difference in heat of each spot on the stove. But also when they are in place I still interact with them, for example when one pot was overcooking I had to tilt the lid which had immediate effect. I was also dealing with multiple pots at the same time in this case.



### **Strong-Specificness: tape stand**

At last my tape stand, I have a lot of different types of tape on here, each serving a different purpose. Not only is tape itself already rather specific but I feel this stand illustrates strong-specificness. As I have sports tape, electrical tape, painters tape and more, not all rolls were on here at the moment.



### **Veerle van Wijlen**

#### **Collaboration: caring for the dog**

The hair of the dog invites for interaction and enables the affordance of stroking or brushing. Multiple access points on the body of the dog lower threshold for interaction and eases participation. Manipulating the dog by brushing and stroking can be done simultaneously by different people, supporting social interaction. Participants have the same goal, caring for the dog, that also improves collaboration.



#### **Situatedness: clothes**

The placement of a piece of clothes in different context changes the meaning of the piece. When it is in the washing bin it is dirty and in the closet it is clean. Clothes also alter the meaning of their location. When a lot of clothes are situated in the washing bin, the washing bin is used as storage place.



#### **Tangible Thinking: gestures while presenting**

Gestures decrease the mental workload while conceptually planning speech production. Hands are used as thinking props in the physical world to externalize your thinking. Gestures are unconstrained actions and based on experience. They help exploring options and are future triggers for new words and sentences. Using both hands helps reasoning about tasks and creating conversations.



### **Space-Multiplexing: playing the guitar**

Inputs, strings, for creating the output, sound, of the guitar are distributed over space. Multiple strings allow for parallel actions or actions in different orders. Both hands can be used simultaneously and multiple fingers can have interaction with strings in different orders. This makes sure that manipulation of the strings leads directly to output. Interaction arises by creativity, experience or memory.



### **Strong-Specificness: door knob**

When approaching a door knob people immediately know how to interact with it and how to open the door by physical affordances of pulling or pushing. Door knobs have specialized shapes and material properties creating meaningful expressions. Different shapes of door knobs allow for different grips. All senses are used to discover the strong-specificness of the door knob.



# Part II: Final Design

A lot of design decisions have been made to come to the final design with the assigned strength Tangible Thinking. Here will be explained what all those decisions were and why these were made.

At the first meeting we wanted a device that would give a solution to the following problem: the general person is overloaded by messages from online social media platforms. We looked at several social media platforms and came to Facebook, since this was a platform that lacked several things in our eyes, which are an accessible newsfeed and proper search methods.

After a group brainstorm session about what the general definition of Tangible Thinking was to us, we came to the conclusion that we wanted to focus on the part of “Epistemic Actions and Thinking Props”. Within this our main focus was on epistemic actions and on keeping track of previous paths taken. With facebook you are constantly liking and interacting with posts but they often do not stick with you and are hard to find again when you’ve passed them. This is the one thing that we thought Facebook was lacking, a proper way to look back and interact with your own activity on the platform.

Some sketches and possible designs were made. The first design had an octagon base on which Facebook posts were visible via a timeline, a screen that would run from top to bottom showing the messages. In the middle of the octagon base, a big knob was placed to be rotated. When rotating the knob, scrolling through your filtered Facebook feed would be possible. Little wooden circles were placed in each corner of the octagon. A little circle would represent liked, loved, saved items and so on. When scrolling through the Facebook feed a wooden circle, for instance a like, can be placed in the main knob to like a post. Later on we decided that it would be nice if the wooden knob and circles would be gears. The strong-specificness of the



First design

gears supports tangible thinking in the way that you could actually connect them. This would help giving the image of actually scrolling through the feed with filters to the user.

This design suited tangible thinking because

- You can arrange the gears in different ways according to what you want to see which is an epistemic action
- Keeping track of previous paths taken regarding your activity on Facebook
- By physically labeling the Facebook posts it will support your memory

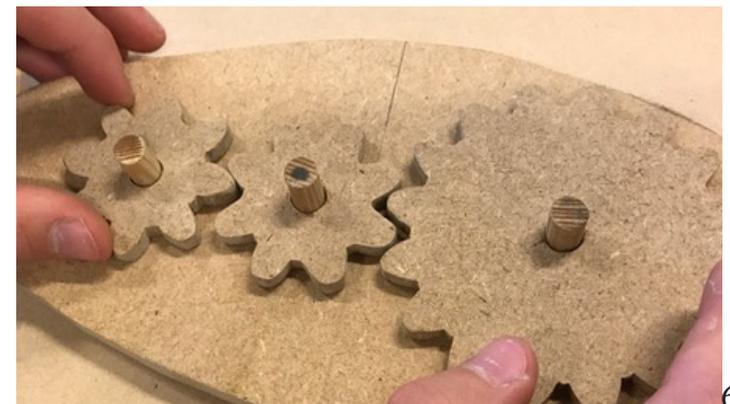
The feedback session with Bart Hengeveld gave us more insight in what could be improved. The octagon shaped base and the screen through the middle were limiting our interaction to some extent therefore those elements needed to be reconsidered. A more concrete focus on tangible thinking in our design was needed regarding our problem statement; namely, decreasing the mental workload of a task (searching for posts) by using the physical environment and physical objects.

We looked at which features Facebook lacked and mainly on where things could be improved by adding a TUI, that enables the general user to think more broadly about Facebook, however decreases the mental workload as well. Concrete, we decided to focus in our design on filtering Facebook feed on the users' preferences as well as looking back at for example feed that was liked, saved a month ago.

We added more physical tokens which would serve as external memory and thinking props. By rearranging the tokens the filtered feed would change, this way the user had to think about what he wanted to see and after that lay down the tokens. This decreases the mental workload of searching posts as you can quickly change the composition of your feed, immediately look through it and explore options. Users can externalize the filtering process.



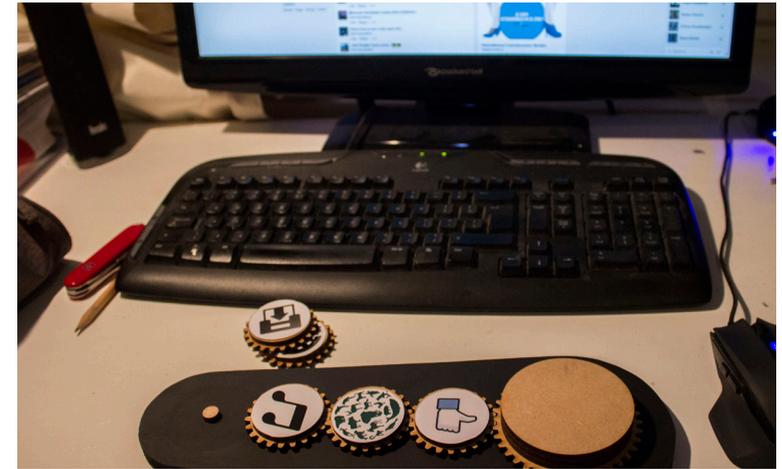
First design



Second design, hand-made gears

We came to the final design - GEARFEED, a design that enables the general Facebook user to filter his/her Facebook feed in a tangible way. With this design the general user is able to look back and scroll through things he or she has liked or saved for instance a month ago. It is also possible to filter your normal Facebook news feed. The main problem when we looked at Facebook is that it is very difficult to track back posts. Furthermore, having the option to filter your feed on a specific theme or on your interests is currently not available. GEARFEED is created to solve these two problems and represents the strength tangible thinking.

The entire design is made out of wood, MDF. The shape of the base goes from wide (the big gear) to small which physically confirms that a filter (small gear) closer to the main gear is more important. The final design has one big gear, along this filters can be placed. The filters represent themes as dogs or saved items, to enable users to filter and look back at e.g. saved posts. For now a total of 4 filters can be placed simultaneously on the base. This to ensure that users can fully filter their feed on what they want to see at that moment. When one of the filters is taken out of the "Chain" of filters, the filters that are not turning are not taken into the filtered feed, as they are not connected. Filters can be switched around and placed closer to the main gear to change the priority of the filter. This way users have to think about what they want to filter on and what filter they find most important first. Options can be explored. Next, users lay down the filters on the base along the main gear and start scrolling through their filtered feed, by turning the system. If that feed wasn't the one they thought or wanted to get, they have to rearrange the filters to make a different filtered feed. Trial & error, epistemic actions and thinking props allows the general Facebook user to tangibly think and reach the posts they want to see more easily.



The three photos above: the final design, GEARFEED

# Part III: Discussion

## Moos van der Bijl

In my opinion our final design: GEARFEED, is a reasonably valuable application of tangible and embodied interaction. Our main focus in this final design was on the strength tangible thinking. That was the strength we were give, however in this final design one other strength is also part of the design. This makes that it is a better application for TEI overall. To come up with this final design we looked at the pitfalls of Facebook and found that one can't look back at the previous paths he or she has taken. Just like scrolling through your Facebook feed, this design does that as well, however it does it in a tangible way. Giving the user the ability to rearrange the different filters of the application and even giving them the possibility to make filters themselves supports easily searching to what they prefer and supports their memory. Since users are actively using the application, by picking filters and scrolling through their feed, it is easier for them to remember what filters they have used to find the same post another time again.

The design has strengths as well as weaknesses. One of the strengths in my opinion is that the design presents the strength tangible thinking very well. One has to place the filters besides the main gear to make a filtered feed. Before one places the filters besides the main gear, he or she has to think about what they truly want to filter and their filtered feed must be looking like. Only after they know what they want, so after they have thought about what they want to filter, they can place the filters in the right order besides the main gear. Than they can start scrolling through their Facebook feed by rotating the main gear. People are actively busy with the filters and are busy in their heads what they want to filter on.

A strength and a weakness in the final design is the simplicity of it. The application only has gears, of which four can be rearranged and can be replaced. The simplicity will take the mental workload of the user down, however it is a simple application, which only supports a few interactions and not many.

When we look at if the design is good at fulfilling its strength, than I personally say yes, since it does what it is supposed to do by filtering the feed of general Facebook users as well as bringing the mental workload of a user down to a certain degree.

Looking at TEI as a whole, unconsciously we brought different strengths into the design. We brought in Strong Specificness by using the Gears that make the iconicity stand out. Furthermore, space multiplexing is something that is in the design, by being able to change the filters simultaneously.

Overall I find it good at fulfilling its task in the strength we got assigned, however to fulfill its task in TEI, it lacks some strengths.

## Sander van Eck

Our design is, as far as I believe, a reasonably valuable application of tangible and embodied interaction. One of the strengths but also a weakness in the design to me is that it is quite minimalistic in a sense that it focuses solely on filtering and scroll through posts. This simplicity makes it easy to interact with and thus also decreasing the mental workload of this particular task, but at the same time is limiting to the extent of the interaction. However, given the strength tangible thinking I feel that this design fits in well as it, as previously mentioned, does allow for decreasing the mental workload of a particular task. With the strength tangible thinking we also came across other strengths in our design, which were necessary to make it more logical, for example strong specificness. The cogs in our design make it apparent that they have to be turned and connected to one another in order to work as well. Also situatedness could be seen to some extent as the place of the cogs mattered. Space multiplexing could be seen as you can interact with different cogs at the same time and rearrange them simultaneously.

One big downfall of our concept is that it is not something that you would regularly take with you, but something you'd use at a desk and often you find yourself using facebook in other places. However, our design is aimed at looking back at your activity so you can use facebook as you regularly would but later on look back.

Still our main focus was on tangible thinking but these other strengths make it so that the design would actually be logical in use and therefor making this a better application of TEI. The problem we found with facebook was as previously mentioned that it was difficult to look back into your activity on the platform. With this problem in mind we came up with our design which helps you do just that as it helps you look back into the previous paths taken. The way it does this is how you would normally scroll through your facebook feed but with the tangible aspect you can quickly change the composition of this feed. The ability to quickly and tangibly change what you are looking for makes it easier for the user to search but also supports the memory. Memory is supported as later on you will be able to find things quicker as well because of the filters you used before, but you will also be able to find the posts you want considering the content and your interactions with it.

All in all our design is a decent application of TEI and it is something that I would see myself using but I feel that it lacks some interaction, for example the option to like posts tangibly, however it shouldn't get overly complicated. It also suits the strength tangible and embodied interaction, especially in the area of epistemic actions.

## Veerle van Wijlen

GEARFEED enables the general Facebook user to look back and scroll through things he/she has liked and to filter your normal news feed on specific themes.

Tangible and embodied interaction (TEI) is an interaction style. Tangible user interfaces have five strengths that can support certain tasks that need to be carried out. Therefore a valuable application of TEI is one that makes sure that the included strengths support the tasks needed to be carried out with it. The tasks GEARFEED need to carry out are

- looking back at posts that were liked/saved
- filter on posts within these liked/saved ones
- filter the normal news feed on specific themes

This design focuses on the strength tangible thinking. This is realized by the fact that physical tokens serve as external memory and thinking props. By rearranging the gears the filtered feed changes, which makes the user think about what he/she wants to see. Rearranging is an epistemic action and helps exploring options to get the most suitable feed. Externalizing the filtering process decreases the mental workload of searching posts. Decreasing the mental workload of the tasks makes them easier to be carried out and thus supports. Most of the other strengths support tangible thinking and in this way support the tasks needed to be carried out. Strong-specific gears create physical affordances of clicking and combining. This improves the understanding of the filter mechanism which supports tangible thinking. The symbols on top of the gears represent the filter theme which links action to effect and eases the cognition process. Space-multiplexing supports the speed in which Facebook feed options can be explored because both hands can be used to rearrange multiple filters simultaneously. According to this analysis, GEARFEED definitely contains the strength tangible thinking and some supportive others that all together support the tasks that need to be carried out which makes it a valuable application of TEI.

A valuable application of TEI is also one that gives a better solution than a graphical user interface design. The main problem looking at Facebook is that it is very difficult to track back posts and to filter your normal feed on specific themes. GEARFEED is a tangible design which has five strengths coming along with it. In the analysis according to the strengths, above, it can be seen that those make the design very powerful in carrying out its tasks that help solving the problems mentioned above. Mostly because GEARFEED decreases the mental workload of the tasks by using the physical environment. Only, this tangible design limits the user in space and interaction. Mostly, Facebook is used for a quick view at multiple places. Because of the shape and size it is not possible to interact with the Facebook messages everywhere at any time. On the other hand the main focus of GEARFEED is to look back at what you have liked/saved and this does not need to be done everywhere and at all times.

This all makes GEARFEED a valuable application of TEI.

# References

Some references were used to understand the interaction style Tangible and Embodied Interaction and its strengths and limits. Credits are mentioned as well.

## Literature

Shaer, Orit, and Eva Hornecker. "Tangible user interfaces: past, present, and future directions." *Foundations and Trends in Human-Computer Interaction* 3.1–2 (2010): 1-137.

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## Credits

Sander van Eck (photography final design, diary exercise)  
Moos van der Bijl (photography first prototype, diary exercise)  
Veerle van Wijlen (photography second prototype, diary exercise)