Interaktionsdesign - Afleveringsopgave 1

Hold 1

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Description of the chosen object

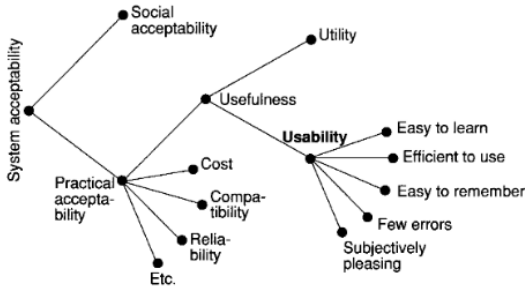
The object that I chose for my assignment is a coffee machine that I bought in a spur of the moment last month. The coffee machine has a compact design, and it includes a dedicated coffee pot. The main material of the machine is white plastic. The only obvious non plastic part of the machine is a metallic band on the front of the machine, the inner layer of the coffee pot and presumably the boiler component.


The top of the machine opens on hinges, this gives the user access to the filter and the water holding compartment. The filter compartment already has a removable plastic filter, but the user can still use a filter paper on top of the existing filter. There is a small handle on the removable plastic filter that the user can grab to remove the used coffee clean. On the right side of the water holding compartment, there is a window with numbers corresponding to centilitres, so that the user can measure how much coffee they want to make and how much of the water has been boiled over to the coffee pot when the machine is switched on. Inside the water holding compartment there is a hole and a plastic pipe. The machine works by directing water down the hole, where it then comes into contact with the boiler, the boiled water will then boil up to the filter room via the pipe. At the top of the coffee pot and under the filter compartment, there are two control mechanisms that allow coffee to flow through to the coffee pot when the control mechanisms are pressed against each other. When the user removes the coffee pot from his dock, the coffee stops flowing down.


On the rear left corner of the machine, the user can find two buttons and a power cable. The length of the cable is approximately 30 cm plus the plug head. The two buttons are responsible for turning the machine on and off. When the power cord is connected, the button on the back of the machine can be flipped to the left to turn off the machine and flipped to the right to turn it on. The button lights up red when turned to the right. The button on the right side of the machine lights up blue when the machine is turned on. When the blue light is on, it means that the boiler is also on, and pressing the button turns off the blue light and the boiler. When the machine has boiled all the water over to the coffee pot, the blue light also goes out.

What is a user-centered design?

When designing a new product or system, it is important to understand who the user is and how they will use it. There are different ideas on how to approach the issue of creating a design that have the user at the center.
According to Nielsen (1993) one the key factors that dictate a user-centered design is usability, the term usability denotes the consideration that can be addressed by the methods that encompasses the idea of a user-centered design. But other than usability there are also other broader factors to consider when discussing user-centered design.



Figur 1 – A model of attributes of system acceptability (Nielsen, 1993)

Figure 1 shows just how broad the criteria a user-centered design have to go through, for it to be deemed acceptable. And with acceptable, it means that the design is good enough to satisfy the needs and requirements of the users and others involved. The acceptability of a design is based upon two factors, its social acceptability and its practical acceptability. Practical acceptability can be analyzed further by categorizing it with traditional categories such as reliability, compatibility, cost, support, etc., and usefulness. The usefulness of a design is about whether or not the design can be used to achieve some sort of desired purpose. Usefulness of a design consists of its utility and usability. While utility asks whether the functionality of the design can accomplished its purpose, usability asks how successfully can the users use that functionality. (Nielsen, 1993)
Usability of a design can not be evaluated by a single parameters, and there are therefore five attributes that help determined a good usability of a design: **Learnability:** Determines how easy it is for a new user to use the functionality of a design. **Efficiency:** The design must be efficient once the user has learned how the design works. **Memorability:** The function of the design must be easy to remember, so the user don't have to relearn everything after some period of not using it. **Errors:** The design must be robust as to ensure that when the user make a small error they won't cause further failure. **Satisfaction:** The design should be agreeable when in use, make the user feel pleased with the design. (Nielsen, 1993)

While usability is important for a user-centered design, there is also a shift toward the experience of interaction with interactive products. The motivation for this shift is to search for a new way to design interactive products that focus on experiential qualities of technology use rather than the qualities of the product (Bargas-Avila, 2011). This focus on experiential qualities is called User Experience, abbreviated as UX. UX is a collection of tools used to better understand and study the experience of using interactive products. UX research evaluate the detail of experience, and on modeling how interactive products itself, characteristics of the user, and context work together in shaping the experience of use (Bargas-Avila, 2011).

User-centered design in the chosen object

While the coffee function as it intended to it is not without any gripes. To better evaluate the coffee machines usability I will use the five attributes of usability to determined whether or not my coffee machine is a good user-centered design.

Easy to understand: The coffee machine came with clear instruction on how to operate it as to ensure that the user know to use the machine safely. The instruction makes it easy to learn how to use the coffee machine, but because of its simple function the user don't actually need an instruction to know how it operate. The user simply put the desired amount of ground coffee and the desired amount of water and then just close the top lid and turn the machine on.

Hot lid: While it is quite an intuitive design it is not without issues. As an example, the lid of the coffee machine is made out of cheap and relatively thin plastic, so when the user open up the lid it will be hot to the touch. This problem can be mitigated by adding a small handle that is a bit more non-conductive.

Easy to master: About the efficiency of the machine, the user can be relatively proficient in operating the machine after they know how it function. I myself have through continuous use developed my preferred ground coffee to water ratio for my coffee. As the core function of the machine is fairly intuitive the user will naturally be able to use it again even after long period of not being in use.

Control mechanism: One of the biggest flaws of the design is however the control mechanism under the filter and on top of the coffee pot, they must align precisely or else hot coffee will pour around the coffee pot lid and not inside it. This issue is both messy and dangerous. As seen from

Figur 2 – The coffee pot lid opened up

Figure 2 you can see a hole on the handle of the coffee pot, this hole is where hot coffee will accumulate when the control mechanism is not aligned. The user will then have hot coffee pour down on their hand when they pull out the coffee pot out of its port. Even a long time user have to be caution when aligning the coffee pot as to not cause a messy problem.

Window visibility: The other issue the user might encounter is the visibility of the window to the water container. The window is not that clear and the text that shows centiliters is in white, so it is fairly difficult to know precisely just how much you pour the water in the container. Perhaps with a different colored text and clearer window, the problem can be solved.

Learnability: The machine have an easy to learn function, because it has an intuitive design.
Efficiency: A frequent user can make their coffee suit their preference.
Memorability: The function is so simple the user will never have to read the manual ever again.
Errors: The control mechanism and the hot lid are only big issues of the design.
Satisfaction: The user feels good when they smell the coffee aroma when the machine is activated.

Litteratur

Bargas-Avila, K., J. A. & Hornbæk. (2011). Old Wine in New Bottles or Novel Challenges? A Critical Analysis of Empirical Studies of User Experience. *Proceedings of the International Conference on Human Factors in Computing Systems, CHI 2011, Vancouver, BC, Canada, May 7-12, 2011*, *Related Work*, 1–10.

Nielsen, J. (1993). *Usability Engineering*. Elsevier Science & Technology.