CSE 510: Advanced Topics in Human-Computer Interaction
Lab 1 – Design Sensitivity
Jonas Klink, SN 0436897
jklink@cs.washington.edu

1. Remote Controls – a historical background

As being an artifact almost ubiquitously present around us in the society of today, the broad variety of remote controls available is staggering. The first machines to be operated by remote control were used mainly for military purposes. Radio-controlled motorboats, developed by the German navy, were used to ram enemy ships in WW I. Radio controlled bombs and other remote control weapons were used in WW II.

Once the wars were over, United States scientists experimented to find nonmilitary uses for the remote control. In the late 1940's automatic garage door openers were invented, and in the 1950's the first TV remote controls were used.

The first TV remote control, called "Lazy Bones," was developed in 1950 by Zenith Electronics Corporation. Lazy Bones used a cable that ran from the TV set to the viewer, and the operation was done by, quoting, "just press lightly with your thumb" (see advertisement in Figure 1). A motor in the TV set operated the tuner through the remote control. Although customers liked having remote control of their television sets, they complained that people tripped over the unsightly cable that meandered across the living room floor.

Zenith engineer Eugene Polley invented the "Flashmatic," which represented the industry's first wireless TV remote. Introduced in 1955, Flashmatic operated by means of four photo cells, one in each corner of the TV cabinet around the screen.

While it pioneered the concept of wireless TV remote control, the Flashmatic had some limitations. It was a simple

Figure 1. Lazy Bones

device that had no protection circuits and, if the TV sat in an area in which the sun shone directly on it, the tuner might start rotating.

2. Observations

The argument of saying those 50 years is a long time might now be close at hand. But let us stop and think about what interface alternations we have achieved over the last half century. Are we actually improving, making the artifact of remote control better in the sense of usability?

The concepts of interface design in the setting of remote controls for me contains many moments where I have just wondered (lightly cursing) "Why on earth did they design it this way?". I will present some of my observations and insights from own and others' situations, using common remotes in daily life.

- *Design the remote control to be intuitive.*

  - Important functions should be mapped to dedicated buttons. I often struggle with remote controls that require a switch between 'modes' to access features.

  - Buttons should be clearly distinguished from each other. Grouping related buttons, and use size, texture, shape and color to make buttons stand out. A wonderful counterexample of this can be seen in Figure 2, where designers made a good effort of labeling the volume buttons, but forgot that being able to find buttons by touch is nice, especially in the dark.

Figure 2. Non-intuitive design

  - There is a whole fortune put into creating a company's own style for their specific remote control, to make it stand out from the other 5 located on the coffee table. This also extends to using the company's own logos and ambiguous icons on buttons. Don't. These are to me often too subtle and would require a text label or some explanation to fully communicate their purpose.

- *Ensure the remote control is accessible for ALL target users.*

  - The remote should not be too heavy or large for extended use. Designers should keep in mind the diversity of users from young to old; some of the remote controls designed for ergonomic use, are often blown up in size and volume (maybe also to accommodate all the functions crammed onto it).

  - Ensure buttons are a good size and well spaced to allow easy access. Friends of mine with large fingers, long fingernails or maybe somebody with dexterity impairment often hit the wrong button. I think that my pretty standard video camera remote, displayed in Figure 3, is a nice example of this.

Figure 3. Mini remote

- *Ensure the functions of the remote control are recognizable and distinguishable.*

  - One should identify the most important and frequently used buttons on the remote, and make these easy to find even when the user is not looking at the remote. Also, buttons should be easy to find in any common usage environment, as for example in the dark. Out of my five remotes, only one has a lighted keypad, whereas all of them are often used in the dark.

  - If all buttons are the exact same shape, one will have to memorize the placement of the functionalities or repeatedly look at the control. The remote control for controlling the stereo of my friend (presented in Figure 4), is what I think this poor design taken to its extreme.

Figure 4. Uniform remote

- *More functionality on one remote is not always preferable to many remotes.*

  o The obvious downside of this is that many contemporary remotes (especially the so-called 'universal') are so filled with functions, that you have trouble finding even one of them. The "Lazy Bones" had only functionality for changing the channel and turning the TV set on/off, and it seems as we progress in time, more is better (at least sells better).

  Starting out using my universal remote (Figure 5), I took me more time to find the functions I was looking for, than actually switching controls. Not to say on how much easier it is to misplace one control, instead of four…

Figure 5. Universal remote

  o A second, quite unexpected, side effect of cramming all functionality into a single remote is that it makes usage harder for some common users. For instance, to be able to fully operate the universal remote in Figure 5, my stepson of 6 has to use both hands, and sometimes shifting grip for a sequence of commands. If children are amongst the target audience (which they today sadly most often are), companies might want to consider offering a smaller remote, of which the Minimote (Figure 6) is an example.

Figure 6. Minimote

3. Discussion and Conclusion

We have certainly come a long way over the last half century as to the technology, but perhaps not as long when it comes to the interface design concerning remote controls. Given the assortments of controls available on the market and the fact that they are very common in every home would perhaps imply a demand from consumers for good remotes. This, however, seems not to be the case. When investigating the common problems I and the people close around me have with standard remote controls found in our homes, I came up with several observations (as suggested above).

Many of today's remote controls suffer from several common interface design flaws. These include unintuitive placement and design of buttons, not sufficient consideration towards special user groups and environments and too many and too poorly labeled functions on a single remote. I believe many of the design decisions are based on historical and economical reasons, rather than actual design consideration. The simplicity of button placement and absence of lighted keypads are certainly two design flaws that I believe has their origin in these two restrictions. The universal remote concept is to me an excellent example of creating new issues (too crammed remotes) when attempting to solve another (too many different remote controls). At least the specialized remotes were often laid out logically, with special physical layouts and controls for important functions. The multi-component remotes have lost almost all the advantages of specialization without providing any real simplification.

Another big issue is of course the aesthetic one. When designing remotes, it is not always the functionality that has high priority amongst consumers, but rather the ability of flaunting a cool looking remote in your stylish home (as is the issue with many other applications, for instance cell phones). As companies try to distinguish themselves on a big market such as this, strange designs of buttons and icons are often the result. Improvements in user comfort and collection of

functionalities often result in downsides for other user groups (e.g. children), and such trade-offs result in a suboptimal product for many reasons.

To conclude this discussion, I will say that I have to agree with Donald Norman in his online arguments on activity-centered design. He there discusses the benefits of the Harmony remote control (see www.Harmonyremote.com, for further information), which lets you select a desired activity from any of the setup screens and all of the relevant devices are turned on, and then switch to the proper state for the activity. Easy design, easy functionality, with a comfortably sized remote. There are ways to avoid problems, even in the jungle of remote controls. "Activity-centered. It works."