

Project 1

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Figure 1A: An up-close look at the fire alarm inside Mandeville Auditorium. It is considered a good design due to the clearly marked lever and function.

GOOD DESIGN - Chapter 1 Terms

Affordances

The fire alarm consists of an *affordance* of a device to be used only in a state of emergency, danger, or panic. Specifically, an *affordance* of the device is the ability for the lever to be pulled down and the alarm to go off. The *affordance* of a handle allows for someone to put their hand inside. The only thing the fire alarm does not *afford* is for small children or short people to access it, as in Figure 1A it is clear the fire alarm is higher than the doorknob next to it. While this could be considered bad design, it may have been intended by the designer to prevent children from playing with something they should not touch.

Signifiers

The dominant color of the device, red, is also a *signifier* communicating to the user that it is something to direct your attention to. This good design includes the color red because the red is typically associated with warnings such as stop signs, emergency exits, and even ambulances. The color red

either *signifies* us to stop, react quickly, move out of the way, or indicate that it is used for emergency purposes. The other clear *signifier* that this fire alarm has displayed in Figure 1A is the labels on the device itself. Big words in legible font, like “fire alarm,” tells the user that it is, in fact, a fire alarm. Users are easily able to figure out how to use the fire alarm because there is a white, clearly-shaped handle once again shown in Figure 1A with a label *signifying* the user to “pull down.” It even includes a down arrow to clarify which direction is down. With these clear *signifiers* along with the previously mentioned *affordances*, the fire alarm proves to be a good design because not only does it clearly indicate to the general user that it is a device for emergency purposes, it is also easy to discern how to operate the alarm even in a state of panic and confusion.

Discoverability

Based on the section about *signifiers*, it is now clear that the *discoverability* of this fire alarm is high. Everything from the color red to the contrast of the handle's white color to the text labels on the device itself boosts the *discoverability* of this design. *Signifiers* and *discoverability* usually go hand in hand with one another. This fire alarm's excellent design does not lack clues to its function; it has high discoverability and can therefore is not frustrating to utilize.

Feedback

Another reason for the fire alarm's good design is the immediate and informative *feedback* that the user and everyone around the user receives as the lever is triggered. The *feedback* consists of a long, continuous, piercing beep that begins to sound when the lever is pulled down. This indicates a good design that is specific to the fire alarm, because if there is not that immediate *feedback*, especially in the case of an emergency, the user would be unable to know if the device has triggered the proper emergency response. Additionally, the user can visually identify if the handle has been properly triggered or not, simply based on the position of the handle after it is pulled down.

Experience

Unfortunately, because of the immediate loud *feedback* from the device, the fire alarm creates an unpleasant *experience* for the user. Ironically, this unpleasant *experience* is what also potentially saves lives and triggers everyone within earshot to evacuate. Therefore, despite the unpleasant *experience*, it is absolutely necessary for this fire alarm to cause an unpleasant *experience*, as to alert people in the building and prevent the alarm from being ignored. It is through this unpleasant experience that the user can achieve the goal of the fire alarm's function, therefore further reinforcing the fire alarm's good design.

GOOD DESIGN - Chapter 2 Terms

Gulf of Execution

The fire alarm bridges the *Gulf of Execution* through its obvious signifiers. The alarm is clearly labelled with both an arrow and words, which suggests lifting and pulling the lever will set off the alarm. Figure 1A clearly depicts the white lever, with the words "Pull Down" in black font. This indicates to the user exactly how it operates, which is a mark of a well-designed object.

Gulf of Evaluation

Similarly, the *Gulf of Evaluation* is bridged easily through the fire alarm's immediate and informative feedback (a piercing beeping noise), as well as its clear *conceptual model*. The user assumes that the fire alarm they interact with will alert surrounding people, and that the white lever will set off this process, which the fire alarm then directly proceeds to do when triggered.

Conceptual Model

Due to the natural and assumed *conceptual model* of an alarm being something that triggers people to pay attention and exit the building, it is quite easy to match the fire alarm's expected purpose with its actual purpose, therefore supporting the fire alarm's good design. Additionally, the space for the hand to fit in above the handle (Figure 1A, white arrow) helps the user infer how to use the device too, simply because there is a gap that is perfectly shaped for an average hand to fit in. This is another example of how the designer cleverly took advantage of how humans build their *conceptual model* based on past experiences and naturally react to the world around them.

Root Cause Analysis

The *root cause analysis* of why someone would need the function of a fire alarm is very apparent. Typically, humans will seek a device to help them when there is an emergency or immediate threat of fire or harm. By analyzing the *root cause* of why someone would need this device, we are able to determine whether or not the device succeeds in solving the fundamental *root cause*. In this case, the design is well-done because it both acknowledges and effectively establishes a solution to the threat of harm through providing easy access, discoverability, and instantaneous *feedback*.

Subconscious, Visceral, Behavioral, Reflective

The fire alarm is successful and well-designed at all three levels of processing. In terms of *visceral* processing, the color red *subconsciously* draws the eye of passersby so that people will easily recall the presence of a fire alarm in the building. In the face of fear, extreme emotion, or reduced visibility, the box is also conveniently located at arms height at the exit, allowing access to teenagers, young adults, or elderly users if they are fleeing the building. Secondly, instant, loud *feedback* allows for quick behavioral processing—the user's actions are easy to register as correctly performed. Lastly, in terms of *reflective* processing, the user will likely only recall the device if the fire alarm performed its task ineffectively. Due to the amount of clear *signifiers* available to the user, the possibility of failure in figuring out its function is low.

Critique from Wednesday Studio:

The fire alarm does not afford younger children's access to the device. While important to note, it does not have a direct impact on the intended design of the function. Additionally, the handle of the fire alarm has a handhold which affords someone to put a hand inside. Could be considered good design. These two points of being a devil's advocate and stating what the fire alarm, specifically the location of it on the wall, does not afford. As it turns out, it does not afford for small children or short people to access. Then, someone else reminded us that it could be good to mention that the fire alarm has a handle which affords the user to put their hand inside.

BAD DESIGN - Chapter 1 Terms:

Affordances



The trash cans at UCSD have many *affordances*. Its primary *affordance* is its ability to be opened and hold trash. The handle, seen in Figure 2B, affords the option of being grasped and pulled. The lever for the feet, seen in Figure 2A, *affords* the possibility of being pushed down in order to tilt the bin open. Unfortunately, the trash can does not afford the possibility of holding objects larger than the bin itself. This could be potentially considered a bad design, as humans who look for a trash can may also desire getting rid of larger and bulkier items.

Figure 2B: This perspective of the trash can focuses on the bin and its handle which affords pulling on it to open the can.

Signifiers

Key *signifiers* that clue the user into how the trash can functions include the slightly upturned, metal handle that is located at the very forefront of the trash can. While the bar *affords* grasping and pulling, the bar handle also serves as an indication that it is able to be manipulated to use the device. However, in comparison to the fire alarm, the handle is not as clear of a *signifier*. As users, we have to rely on our *conceptual model* of handles in order to identify its function. Of course, this could be because a fire alarm is intended for clarity in emergencies, while a trash only needs to be a place for depositing waste.



Figure 2A: This photo shows a close up of the foot pedal and any user can see how thin, unnoticeable, and how inconvenient of a design it is.

Next, there are two logos on the front of the trash can—one is a small triangle symbol and the other is an image of a figure holding something above a bin. In America, these symbols are cultural *signifiers* for recycling and waste holders, respectively. Following that line of thought, the color is another *signifier*: blue for recycling and gray for waste. While the color and symbols are generally decent signifiers, the foot lever at the very bottom of the trash can seen in Figure 2A can be considered poor design because it is a) difficult to discern the metal imprint of a foot that signifies using your foot to press down and b) it is located too low, at a generally unobserved area. Often, users mistake the foot

lever for merely decoration. Perhaps a solution to this weak signifier would be to color the foot lever a brighter, more visible shade. A yellow or red would more easily attract the user's attention.

Discoverability and Experience

Next, looking at the trash can's discoverability, it is obvious that the trash can opens forward, toward the user. However, while the handle is a clear signifier for the user to pull out the bin, it is ultimately not a pleasant *experience*, which is one of the *fundamentals of interaction*. The user is forced to smell the insides of the trashcan and see the residual marks of everything from gum to mysterious stains before depositing their garbage, which is not ideal. Ideally, the user should deposit their garbage without needing to think about the process *consciously*—however, the lack of an open slot and the presence of a handle and lever prevent this.



The immediate *visceral* reaction that humans have to dirty scents and marks prevents the experience from being forgettable. The trash can fails to function successfully at all three *processing* levels. In terms of *behavioral processing*, the feedback for trash can's operation is inconsistent. Upon *reflective processing*, the user feels a sense of irritation, incompetence, and dislike due to their awkward interaction with something that should have gone smoothly. As a result, while the *discoverability* of the trash can's function is high, the *experience* for the user is not at all pleasant and marred by emotions ranging from disgust to frustration. This is a mark of bad design. One possible solution to this could be for the trash can to have an open top, or an open top covered with a flap to ensure ease of access and a more pleasant experience.

Figure 2C: This photo displays the limits of the size of the bin, communicating to the user that large objects are not meant to be thrown in there. Additionally, the inside of the bin has lots of visible stains and marks. Unpleasant!

Feedback

The problems with the poorly designed trash can begins primarily with the lack of immediate *feedback* upon pressing the foot pedal. Though the foot lever has a *signifier* (metal imprint of a foot), it does not immediately and informatively offer feedback. The trash can opens very slowly in response to the lever being pressed down. Its function is not predictable for the user, no matter how hard one pushes. The lack of consistency for the lever leaves the user feeling frustrated, because the expectation of how the function should work does not match up with reality. Because feedback is not correctly established, the trash can demonstrates poor design. Solutions for this issue range from altering the internal mechanism of the trash can to have the

bin open immediately, to getting rid of the lever altogether. Better to have a functional design than to have a fancy one!

BAD DESIGN - Chapter 2 Terms:

Gulf of Execution & Gulf of Evaluation

The trash can's design contains clear visual elements and signifiers which help smoothly bridge the *Gulf of Execution*. However, when it comes to the *Gulf of Evaluation* after the action of opening and throwing the trash into the bin, the user finds that there is often a lack of response: in this case, the bin opening at inconsistent speeds, causing both frustration and inconvenience for the user. In simpler terms, with clear *signifiers*, the user is able to execute the actions before a normal trash can. Unfortunately, the user *experiences* a long evaluation process because it is difficult to figure out why the trash can does not work like it should. As a result, users may blame themselves for being clumsy or weak, leading users to avoid the bin in the future due to its poor design.

Root Cause Analysis

The *root cause analysis* of why someone would need to open the trash can would be because they need to get rid of the waste in their hand that is no longer of use to them. Specifically, the root cause relies on the human desire to ease a burden (or trash). Admittedly, this trash can solves the initial *root cause* need of the user, but it is achieved after much frustration. In the end, it is more burdensome for the user to get rid of the trash. It even may cause the user to be late to their class. Therefore, this trash can is a bad design.

Critique from Wednesday Studio:

We admittedly needed more feedback for our bad design and we got many good suggestions. For example, it was suggested that we mention that the foot lever is hard to notice because it is right up against the trash can and is a thin long pedal that isn't easy to press down on. Then, the fact that the trash can is entirely enclosed lets the user know that they will not know how full it is before they try to throw something in. Also, because there is a bin where you put trash into after you open it, from Figure 2C, you can tell that the trash can does not afford throwing away larger objects. We were also reminded that the colors and symbols are good signifiers for recycling and trash so this design is not completely bad in look but just in function. Finally, it was brought up that we could mention that the slightly rounded top doesn't afford someone to easily set something on top of the trash can.

Critique from Writing Hub Session:

During the writing hub session, we focused a lot on clarifying what an affordance and what a signifier is. Then, we tried to differentiate what a mental model versus a conceptual model is. We thought that it may be necessary to put this down as evidence of why the trash can is a bad design but only if necessary.

EXTRA CREDIT - End of Session Summary PDF Link:

<https://drive.google.com/file/d/17UgNGThkmmSayUmpyt-42bLI2q0Acie2/view?usp=sharing>