CS6750 Assignment P2

Becky Caruso
rcaruso3@gatech.edu

1 FIVE TASKS IN AN HOUR

I selected an hour in which I was attempting to focus on homework but was interrupted with a family matter. I found this observation interesting because it demonstrated how quickly one seemingly small interruption can derail my whole train of thought until the entire matter is resolved. Noticing this experience helped me better understand how my spouse with ADHD feels when I ask questions that are not time-sensitive while he is trying to center his thoughts for work!

1.1 Create draft assignment M1 survey.

At the top of the hour, I began creating my PeerSurvey to continue the Assignment M1 needfinding plans. My goal was to create a draft survey with questions for my needfinding exercise. My interfaces for this goal were my needfinding questions from Assignment M1 and the PeerSurvey application in Google Chrome. The object resulting from this interaction was my draft Assignment M1 survey in PeerSurvey.

After learning the basics of creating a new survey, PeerSurvey presented a very direct experience of my survey with very little distance from the task. The interface became relatively invisible except when pasting questions from my list and items in the survey could be dragged up or down on screen to intuitively reorder them. This interface became invisible through good design and took very little effort to learn.

1.2 Unexpected phone call.

Just as I finished this task, I missed a phone call from my sister. She had called earlier in the day without leaving a message, so I now had the goal of returning her call, finding out what was happening, and trying to end the call quickly to resume my homework. The interface for this call was my Android cell phone and the objects were a phone conversation about an Amazon order that was shown

as delivered in Amazon's system and the knowledge that this package was not in my sister's possession.

Phone calls can seem innately direct because they reproduce face to face conversations, but there is no physical equivalent to entering a series of numbers before talking to a person in your presence. However, this interaction felt very direct and invisible because we have learned from an early age how to talk on the phone and process conversational information this way. There was no distance between the interaction and its object since the entire conversation was verbal. I did not spend any thought on the interface beyond choosing the call log rather than my contacts to fetch my sister's phone number for the dialer then starting the call. The interfaces to respond to missed calls have become invisible since I learned how to operate this smartphone but initially there was noticeable distance between me and my object when I had to consciously choose whether to dial a number, select it from contacts, answer the call as it rang or call the number up in memory from the missed call log.

1.3 Check Amazon order details about this purchase.

I had placed an Amazon order last week for my sister and delivery tracking messages indicated it had been delivered Saturday. After learning the package was not received, this formed an overall goal of correcting this delivery with several sub goals.

The delivery confirmation message from the weekend included a photo showing the package on the ground. The photo was so small with so little contrast that it was unusable on my phone but it was the only clue showing the package got off the Amazon truck.

The first sub goal was to look closer at the order history details and try to decipher the tiny delivery confirmation photo showing where the package was left. Still using the telephone interface of my smartphone, I also launched the Amazon app interface and confirmed that pinch\zoom in the app does not enlarge the delivery confirmation photo. Then I switched interfaces to my laptop and the Amazon website in Google Chrome where I could magnify the screen by 200%. I did not create any objects through this interaction, but I retrieved several to use for the next subtasks: the Amazon order tracking number, the order delivery

history and a clear look at the confirmation photo showing my package in a rusty lawn chair next to a different house number than my order's delivery address.

I expected parts of this interaction to be direct (pinching and zooming the photo in the Amazon app) but they were not. There was palpable distance between me and my object as I failed several times to enlarge the photo or read its details. The final solution seemed to have the greatest distance between me and the photo since I had to magnify the entire web page in Chrome to enlarge the embedded photo. Throughout this process, it was painfully clear that the interface stood between me and my object and most of my mental energy focused on the interface.

1.4 Search Google Maps for the mystery house number.

At this point I knew Amazon customer service was the only solution, but the phone call was still ongoing. The delivery confirmation photo only showed a house number hung on a stretch of cattle fence but no street name. Hoping the package had been delivered to a neighbor's house, my subgoal was now to search for this number in my sister's zip code and identify the street. My interfaces were the telephone app, my laptop, and Google Maps on Google Chrome. The only object resulting from this task was the knowledge that at least five streets in her sprawling zip code have house number "17201" and there were even more houses with that number in the next nearest city. The package could be anywhere from 1-10 miles away and the street was still unknown.

This task is not included in the discussion of directness or interface invisibility.

1.5 Contact Amazon customer service.

Now I could finally attack the overall goal, and contact Amazon customer service with these facts so my sister could get her package. The goal was to report my package was not delivered to the address from my order and resolve the problem. I ended the phone call with my sister and switched interfaces to my laptop, Google Chrome and the Amazon web site. Within Amazon's site, I switched between the order history, FAQ, and Contact Customer Service interfaces until I found a chat button to initiate the contact. The chat interface indicated long wait times for customer service and prompted me to accept a phone call, so the interface switched back again to my cell phone. The object was a phone conversation about my Amazon purchase and a replacement order for the missing item.

This interaction felt very indirect with great distance between me and the object. There were no buttons presented within order history to report missing packages, only an option under "how was your delivery?" to vote thumbs down and say the package was sent to the wrong address. That option did not however, start a customer service outreach. Nothing in the interface was invisible and required multiple clicks through different screens in pursuit of the customer service button. I was keenly aware how much of my own knowledge I brought to this screen and task to accomplish my goal.

2 AN INVISIBLE INTERFACE

Last fall, I bought a Cuisinart ice cream maker after online pandemic shopping and the closure of the grocery in my town highlighted our inability to get high quality ice cream without advanced planning. My father had an old-fashioned rock salt ice cream maker that was bulky to store, required copious amounts of ice and rock salt to use, and could only operate outdoors so there was a learning curve to this countertop device.

2.1 Components of the interface.

Figure 1 — Cuisinart Ice Cream Maker with Extra Freezer Bowl (Image Source: Williams-Sonoma)

The ice cream maker did not have many parts, but their use, assembly and operation were all new. The base unit was most straightforward, with its only affordance the single speed power switch. In spite of the limited pieces, I initially had to remind myself that the freezer bowls must chill for 8 hours before use, how to assemble the unit for use, where to find the recipe book, and tricks to keep the ice cream mix from instantly freezing the paddle to the bowl when filling the ice cream maker.

2.2 Current thought process.

This interface has become invisible through my learning how the whole system operates and memorizing steps rather than rifling through the manual. After learning from reviewers online, I store the bowls in the freezer at all times to keep them ready for use. Since we prefer vanilla ice cream, I memorized the four-ingredient recipe that came with the rather than whip out the recipe book each time. I have learned how to quickly assemble the motor base, paddle and shroud and I now know to mix up and refrigerate the ice cream liquid before assembling the ice cream maker so the freezer bowl stays coldest.

2.3 Redesigning computational interface for invisibility.

Much of the computational interface is hidden simply by the lack of affordances but a few simple graphics could get users to unconscious proficiency much faster. Many user reviews noted the plastic paddle can freeze to the bowl if the ice cream maker is not running (and turning the bowl) when the mix is added. A simple graphic on the side or top of the motor base could teach new users this tip. Although the manual estimates that ice cream will be ready after 30 minutes of churning, the machine does not have any end-of-cycle chime. Instead of having users watch the ice cream consistency or listen for the motor struggling against the thickening ice cream, a timer bell could notify users that the food is ready.

3 HUMAN PERCEPTION ON AN ADVANCED TREADMILL

User interfaces often include visual, auditory, or haptic feedback and advanced treadmills can use these signals to make workouts more engaging, notify users of changes in workout parameters or to motivate them toward higher performance levels.

3.1 Current uses for these types of feedback.

Advanced treadmills with interactive features use visual, auditory, and haptic feedback to inform users of their current performance within the program parameters. Many treadmills still rely most on visual feedback, with graphical displays of heart rate, calories burned, distance traveled and program settings like deck incline, speed, and elapsed time. For machines with built in pulse sensors, light haptic feedback is sometimes provided to confirm that the machine is reading the user's pulse through the touch sensors. Machines with virtual running interfaces can combine visual and auditory stimuli through the virtual training routes to immerse exercisers in another locale as they use the treadmill.

3.2 Additional feedback options

Advanced treadmills could provide richer and more interactive feedback by expanding the use of these feedback signals. While machines might already include graphics showing the user's current heart rate, a more personalized visual signal could monitor the user's past and current workout history and provide visual cues when the user should work harder to meet the workout's target exertion level. To motivate users and make the workout more enjoyable, the treadmill could share data about the user's running cadence with streaming music apps so playlists' beats per minute match the runner's pace. If the treadmill were executing an interactive and varied program, an audible signal could be played to let users know the treadmill was about to change speed. For treadmills with pulse-oximeter sensors, a haptic signal could be send through the finger sensor when the user is exercising too strenuously.

3.3 Proprioception and treadmill gait

Outdoor runners learn to monitor and adjust their gait, stride length and foot position in reaction to the terrain. Treadmill users might not pay as much attention because the cushioned treadmill deck, smooth surface, and predictable speed mask these factors. The treadmill deck and belt provide some proprioception feedback through their shape beneath the feet, but the treadmill could use interactive sensors to monitor the user's footfall position on the deck. If that data were paired with a visual display of the user's stride, foot alignment and gait attitude, this could help users develop an even stride length, running form with even foot spacing and well aligned steps.

4 REDUCING COGNITIVE LOAD IN INTERFACE DESIGN

4.1 Letting the user control the pace of the Menards voice response system.

Menards is a home improvement chain in the Midwest, competing in the same market space as Lowe's Home Improvement or Home Depot.

While Menards markets itself as a "hometown" store, its customer face is decidedly unfriendly because the main phone number goes straight into an automated voice response system with double-digit choices of departments. Customers might call Menards to speak with the garden center but must wait for the system to recite all the departments before getting to respond. Even if users know they want the millwork and cabinets department, I believe the system will not accept option "26" while the voice is still reciting option "11". This interface violates the principle of letting the user control the pace since the user cannot accelerate or slow the IVR speed or back up the list without starting over from the top.

To respect this tip, Menards could let present fewer initial choices with high level categories like lumber, special orders, plumbing, floor covering and then more specific options below that like building materials, millwork, outdoor landscaping, etc. The voice response system could tell users the escape option to directly enter a department extension and let users speed or slow the voice prompts. The easiest way to give users control over the pace would be a true interactive system asking in natural language why the user is calling.

4.2 Emphasizing essential content while minimizing clutter on CNN

CNN was one of the first news services to borrow graphic styles from the New York stock exchange and use chyron news crawlers to display headlines across the bottom of the screen while the newscasters discussed a different story in the main window. Some of their news programs now expand this idea and frame the show hosts in the main window while the chyron scrolls, and another sidebar of quotes and short headlines fills the side pane.

This visual layout violates the tip because there are too many headlines on screen for viewers to read or comprehend before another set replaces them. This also creates accessibility issues for viewers who read slowly, subvocalize when reading, or use closed captioning since the default closed caption box position completely covers the scrolling news bar. Worse still, the focus on the "main" story

sometimes obscures more important stories in the news ticker where they scroll by illegibly and unnoticed.

To improve this, CNN could reduce the length of the chyron stories so they do not scroll past for minutes while the broadcasters discuss another topic. Upcoming story coverage could be indicated in the side pane as a signal that a story is in the rotation. And there could be better curation of the stories in the chyron compared to the main window to avoid hours of talking heads debating the same subject while breaking new stories stream through the ticker.