process book - i

control redesign

september 2017

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05-651 c, interaction design studio i

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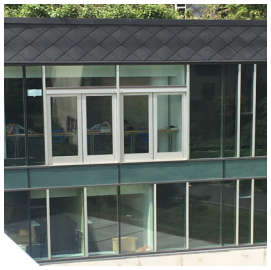
I hereby introduce you my new design, Stritch.

20 controls around me

"Photo 20 controls. Good or bad. Vital or trivial."

10 out of the 20 controls I found across the campus and my apartment. This is the first time I started to notice many inconvenient designs nearby, tangible.



The other 10 of the 20 controls.

Some designs are evolving. Some persist because of the legacy issues.

3! out of 20

"Pick 6 controls and let the ideas sparkle. Made 3 into physical models. "

Electronic stapler, lamp switch and vending machine panel are sketched.
Trash bin. traffic light button and shower control are turned into phyical models.

sketched

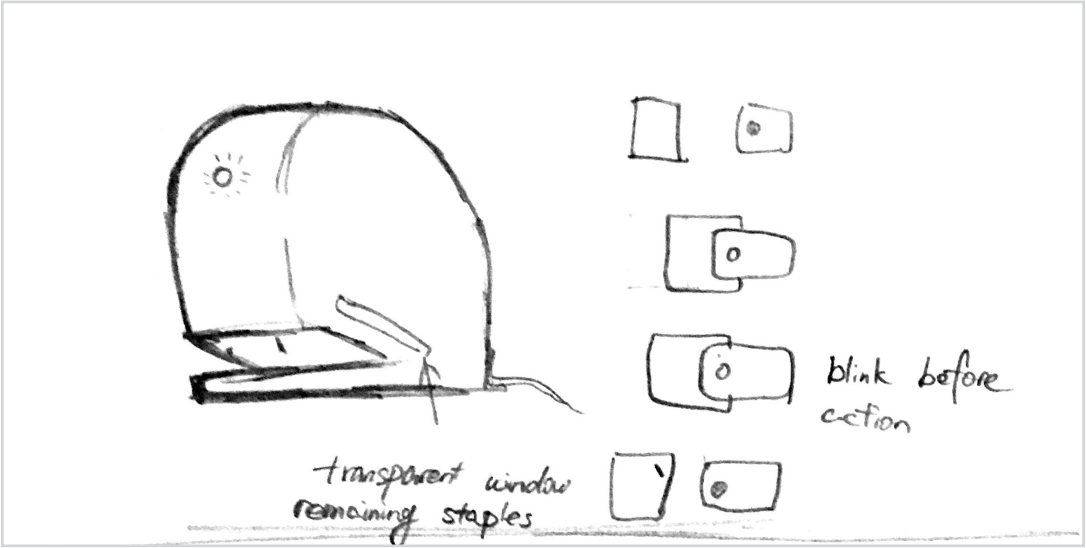
modeled

sketched - electronic stapler

Automatically staples paper together when detected paper insertion.

Affordance: A little fissure at the bottom, indicating I should insert something flat.
Feedforward: This is placed next to a printer -- the only reason I guessed that it is an office supply.
Feedback: No indication whether it is working, malfunctioning or simply ran out of staplers. What often happens is, I put papers beneath, wait for a while, and nothing occurs. When I give up and start to retreat my paper, it suddenly staples my paper, leaving a staple in a awkward location.

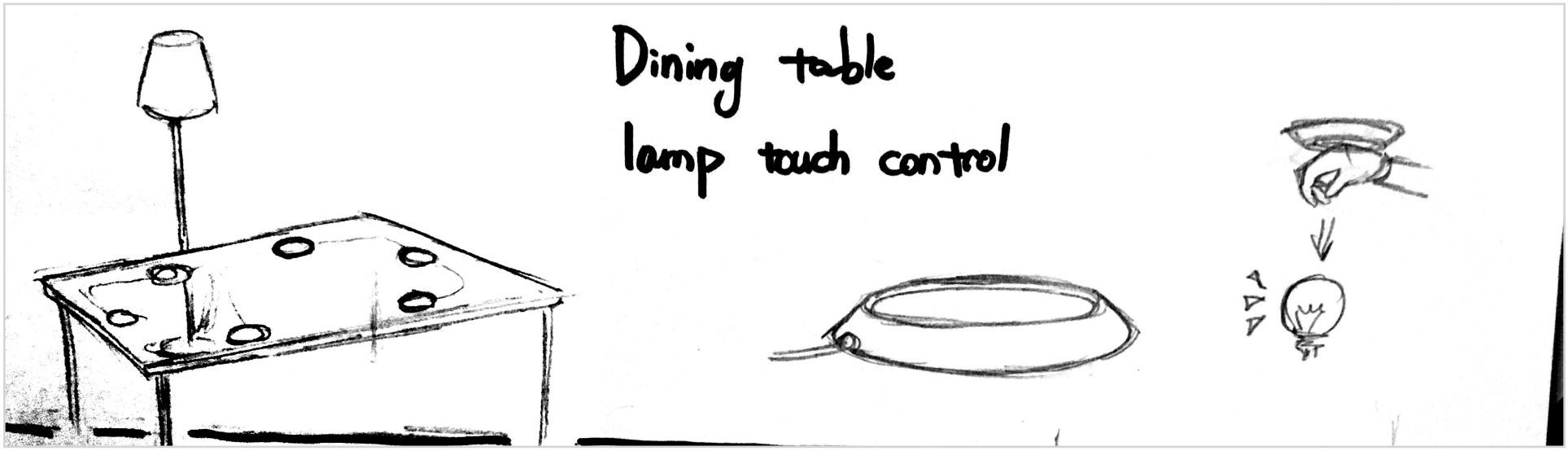
Solution:
Put a little window at the side to indicate the amount of remained staples. Also use a flash light at the head to indicate its status (idle - paper detected - stapling - idle). This will give a more useful feedback to the user.



sketched - lamp switch

Turn on a big lamp, which illuminate an entire dining table.

Affordance: I saw a switch for me to press. Yet this switch is very obscure -- my guests usually need to examine the entire lamp before they can locate it.
Feedforward: This is right under the light, so I guess I can turn the light on in this way.
Feedback: The light gets turned on.
Solution: Place a touch pad at the bottom of the table, so that the users will not have to reach all the way up to turn the light on.
However, when I examined this design later, I discovered that this only makes the switch harder to find, which worsen the affordance problem.



sketched - vending machine panel

Handle the transactions.

Affordance: I saw many buttons for me to push, and places to insert cash, coins, and CMU ID.
Feedforward: The merchandise selection is clear in that each button is right below the corresponding object. However, the layout creates confusions like whether it is money first or selection first, or what to do when I only want to check the price.
Feedback: I get the desired things out. Occasionally, the machine is broken, and there is no sign whether it is running out of stuff, or money, or both, or I just have to kick on the machine.

Solution:
Put the price right next to the selection button. Also, make the transaction panel flow linearly, rather than let people moving back and forth to check where to put their money, or is there an option to just pay with CMU ID.

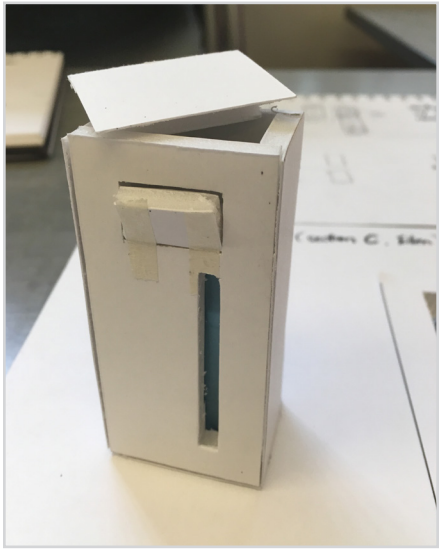
modeled - trash bin

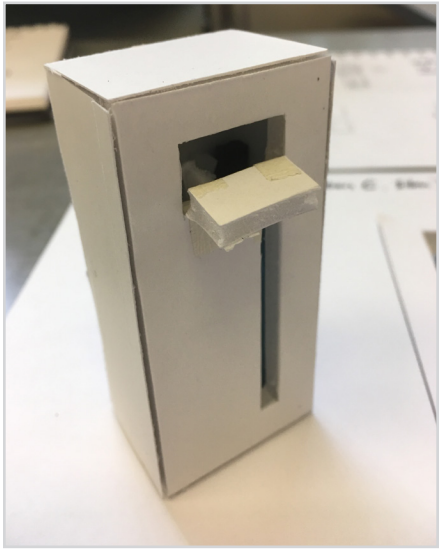
Store the trash into a confined space. Redesigning the one on the right.

Affordance: A handle for me to pull.
Feedforward: The icon indicates that this is a spot to throw my trash. Sometimes I get headache when the trashbin is full.
Feedback: I can hear it when the trash drops inside the bin.

Besides, these trash bins at CMU are the only public trash bins I have seen so far that have handles with them. Since it is placed right next to a food truck, I can imagine how sticky the handle will get after a while.

Solution:
Add a foot pedal (not modeled) for people to step on. Add a little window at the side so that people can tell how full it is. A blocking mechanism to prevent people from throwing trash in it (lock-out feedback) will also help solve the problem.



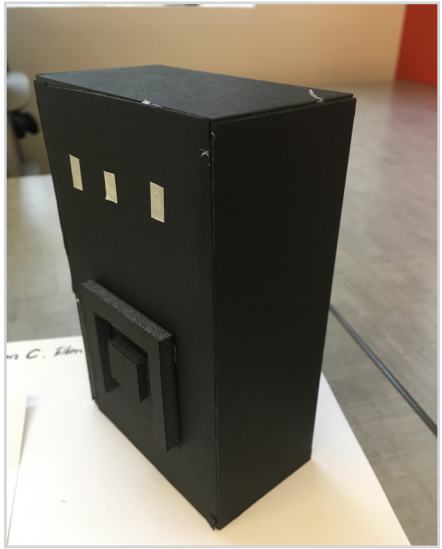


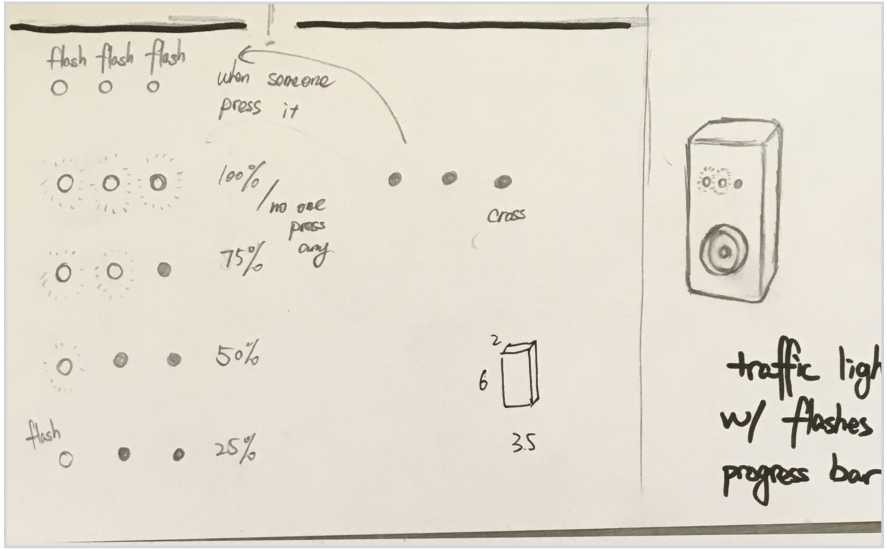
modeled - traffic light button

Push to cross the street.

Affordance: A button to push.
Feedforward: As a foreigner, when I first came here, I have no idea what this button is for. There is no sign for that. Even after I learned its functionality, sometimes I still have trouble telling which street it is controlling.
Feedback: Users have wait before the traffic light turns white, which is a bad delayed feedback. I often press it multiple times to ensure it receives my input. A lot of people do the same thing, which shrinks its life span.

Solution:
Add a group of LED lights at the top that serves like a progress bar as feedback mechanism. When the button is pressed, the light flashes, and the remaining lights would tell you how long you still have to wait.

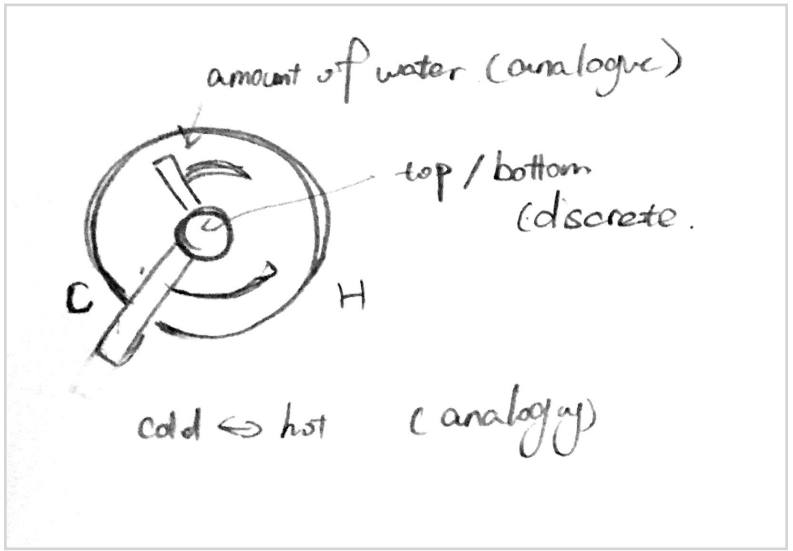




modeled - shower control

Left: hot water. Middle: shower head vs lower fauset. Right: cold water.

Affordance: Three spinners to spin.
Feedforward: I know they control showers. There should be one or two controlling the water temperature -- I guess the ones on the sides. What about the one in the middle? Water amount?
Feedback: The water changes. I see that the middle one controls the amount of water to go up to the shower head.
Solution: I turned the hot water + cold water controls into temperature + water amount. The shower head control in the middle was turned into a binary button at the middle to push / pull. This is more of an aesthetic experiment, and design outcome looks like a clock.

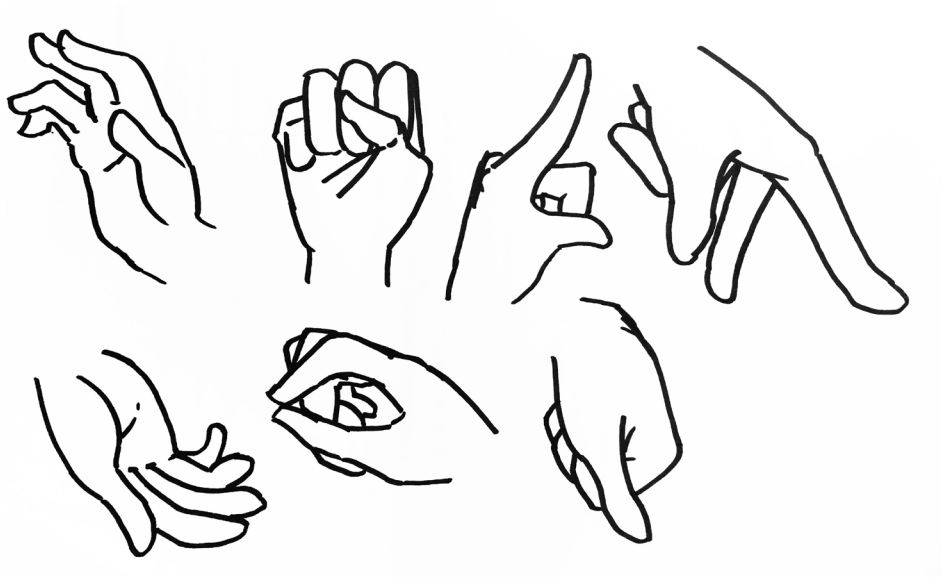


the blessed one

"Grab one control and redesign it based on the class feedback."

Based on the overwhelming creativity from the first studio gallery, I decide to re-innovate further. I want to create something that looks more inviting and aesthetically satisfactory.

Because I have already thought deeply into the three selected modeled controls, I decided to look into **something else.**



Elegant, intuitive, inviting, beautiful...

Is there such a thing that you just want to put your hand on instinctively and want to interact with it?

...as if you are playing a musical instrument?

A new light dimmer. When I present this to the class, they all want to slide up and down with their fingers.

Usually sliding up means “more”, which can mean more “brightness”. Here if you slide up, the corresponding light will be brighter; if you slide down, the light dims. To enhance this perception, I added two icons of sun shining, one bigger with more lines coming out of it -- this is a typical cultural convention of “brighter”. The brightness level is adjusted according to the position of the “last touched screen”, in case people start sliding from the middle of the switch.

Easter egg: if you double tap on the string, the light will switch off completely. Double tap again, and it will go back to the same light level when it was shut off last time.

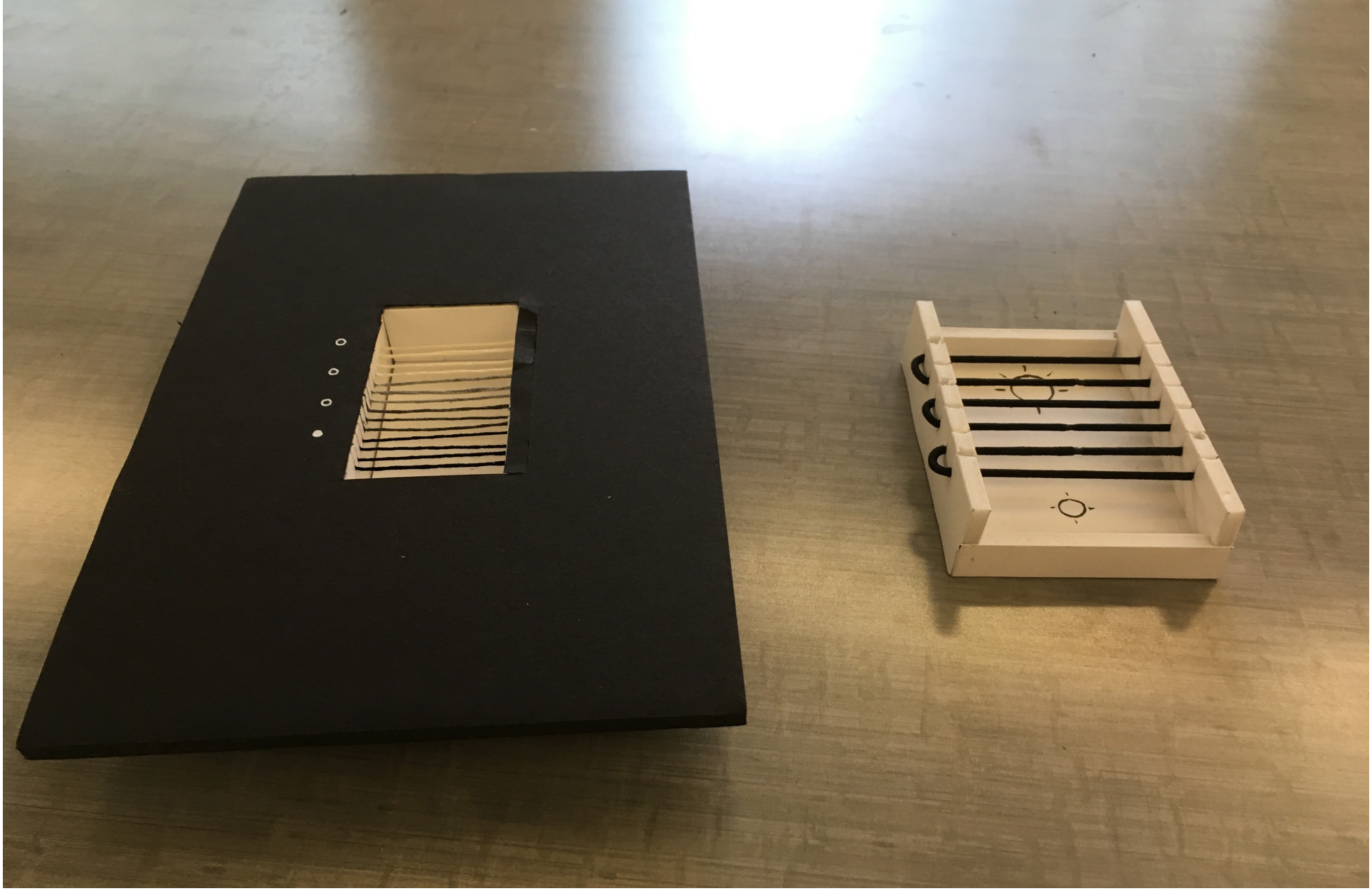
feedback from the class critique

“ I can play with this thing for the whole day, rather than using it as a light switch” “How can I know if this thing is inviting me to tap on it?” “Interesting” “How do I know which brightness level I am currently at?” “How do you inform a novice, who just enter a dark room with this switch installed, to know what to do?”

I threw away some of them,

“
I can play with this thing for the whole day, rather than using it as a light switch” ~~“How can I know if this thing is inviting me to tap on it?” “Interesting”~~ “How do I know which brightness level I am currently at?” “How do you teach a novice, who just enter a dark room with this switch installed, to know what to do?”

and made another prototype.



Stop playing with it	**Use inelastic strings. Make the strings denser.**
Brightness level query	**Add LEDs next to the switch as an indicator.**
Switch novice	**Make the string shallower and easy to reach.**

feedback from the class critique

“ The position of the LED light makes me confused -- the LEDs and the switch shall be grouped together.” “Left and right swipes are more intuitive? Not up and down?” “Ain’t I don’t want the LED to be glaring at night time. That would be annoying.” “Interesting” “Have you experimented with the depth?” “Is this the final scale?”

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Again, I did some further iterations to refine the model.

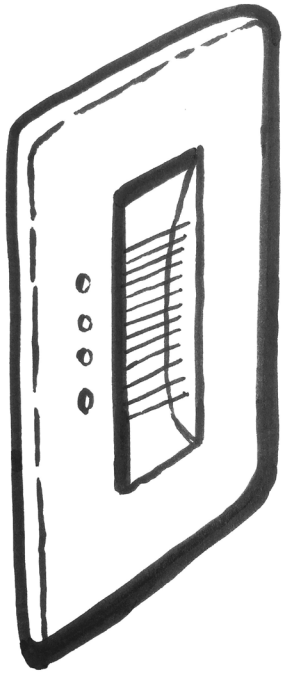
LED position	**Put the control and the LEDs in rhe same frame,**
LED glaring	**“When at the darkest level, the corresponding LED will also be dimmer than the other LEDs.**
Depth	**Make the switch frame shallower.**
Scale	**Match the switches size to that in the real world.**

and here comes my final design --

STRITCH

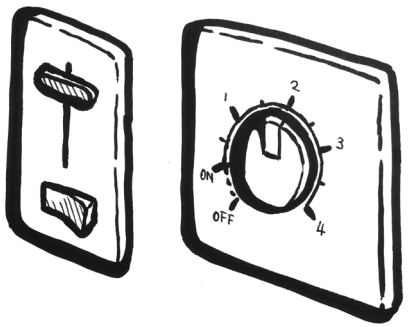
"I hereby introduce you my new design, **Stritch**."
Said the designer.

"I assure you, that it is simple, direct, and elegant.
I like it, and I hope you would, too."



Current solution

Light Dimmer



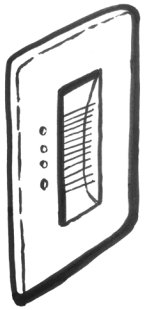
(from left to right)

1. A mix of both binary and spinning control. The sliding and switching affordance is clear, but the feedforward on how the two controls work with each other is rather confusing,.
2. Spinning control. Does not turn lights off instantly.

Introducing the

Stritch

String × Switch



Stritch™ allows its user to slide up and down to adjust the room brightness, and will adjust the light level according to the last pressed string.

The design resembles a musical instrument, with an affordance inviting the user to swipe through the strings. The feedforward is also clear, as this is a one dimensional control.

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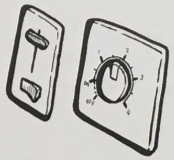
Current solution

Light Dimmer



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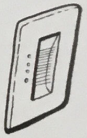

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enjoy.