Minji.

A SMALL, CHEAP REVOLUTION.

USER STUDY REPORT

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Section 1:
PROJECT DESCRIPTION

Minji is a compact disposable cardboard furniture system designed for use in micro-apartments (~450 sq. ft.) that includes a desk, table with seating for 4-5, expandable armchair/ couch, book shelves and coffee table. The Minji is a system designed specifically for micro apartments that is affordable for the demographic who currently needs it most.

While the carbon footprint of the fabrication and recycling processes of corrugated cardboard for use in furniture make it a far cry from a perfect cradle-to-cradle system, we propose it as an alternative to our current broken system, as well as a way of generating discourse on the larger issue of our disposable material culture.

If the furniture being used by young urban nomads is already inadvertently turning into disposable furniture, why not take that as far as it can go?

PROJECT OBJECTIVES

The system includes all necessary furniture items for common areas (living/dining/office)

The system consists finished pieces that serve/ can transform to fill multiple functions, and fit together in multiple combinations according to the needs of the user.

As many pieces as possible serve as storage.

As much of the material used as possible is recyclable/ biodegradable

The system needs to be as cheap as possible. Die-cutting will be used to cut the pieces out, making the manufacturing process much cheaper.

Avoid glues, resins and non-cardboard hardware for easy assembly and disassembly.

The system can't damage the apartment (ex - no wall-anchored shelves).

Must be able to be flat-packed for shipping.

PROJECT STATUS

At the time of this document's writing (mid-February), the Minji system currently includes working prototypes of stack-able cardboard bookshelves and stack-able stools for use in dinner seating that double as storage, as well as a very basic website prototype. These are the pieces that we will be testing in our user study along with a questionnaire pertaining to the core concepts behind our project, including our user group.

Based on the results of this user study, we intend to iterate on the working prototypes we currently have, and apply that knowledge forward towards larger, more structurally complex

USER STUDY GOALS AND HYPOTHESIS

Through this user study, we expect to find any structural faults in our prototypes due to the constant assembly, use and disassembly by users.

Section 2:
DESCRIPTION OF METHODS

USER STUDY GOALS

The goals for our user study were to find out whether our idea of disposable furniture for micro apartments would be appealing and useful to people within our target audience. We also wanted to test user's reactions to our prototypes, both the physical ones and the website, to see if they were easy to understand. We also wanted to find the user's preference for either velcro or zipper as a way to put together the physical prototypes.

METHODS

The user test involved four methods, a questionnaire, a task involving tangible objects, a task involving a computer interface, and an open discussion.

SET UP & PREPARATION

Materials

The material needed for this user test was a large space, our prototypes, a computer, printed off questionnaires, writing utensils, a video camera, and a printed off poster of our project.

Questionnaires and Tasks

The questionnaires are attached as an appendix The first task were to put together our two prototypes (the bench and the shelf piece) from a flat pack state. The second task was to complete a set of tasks on the prototype website.

Time and Place

The testing session took place in room 3020 in SFU Surrey from 11:00am until 2:00pm on Wednesday, February 22nd.

Documentation Method

The questionnaire part of the user test was all done on paper. The task of putting together the prototype was documented on film. The final task of using the website was documented through screen capture. Throughout the whole testing process notes were taken on the computer.

Study Execution

In our study our users first filled out a questionnaire which asked them questions about their living situation and moving habits, which helped us figure out if these people fell within our proposed user group. If they did, this was supposed to give us more insight to the habits of the urban nomad. After this we introduced the users to our project and to the physical prototypes, laid out flat on the ground. We asked them if they could put together the two prototypes from their flat-pack state using only the photos provided of their final state. After they had completed this, we introduced them to our website, and asked them to do a few tasks on the prototype. This was then followed by a final set of questions and a discussion with them on their views of the project.

Questionnaire Questions

Part 1: pre-test

Please draw the floor plan of your current living space on the paper provided. Include light sources and furniture if possible. - how big is it, roughly? What style of apartment?

Living Space and Situation:
What kind of building (apartment, duplex, etc.) Do you live in at the moment. Do you rent or own your current living space?

How much money have you spent on furniture?

Where did you buy it from?

How long have you had it? How long do you expect to have it?

Have you ever gone away on an internship or co-op, or other short-term stay away from home?

What did you do for furniture in this situation?

What are the 5 most important pieces of furniture (aside from a bed/bedframe, and bathroom) in your home, in no particular order:

Nomadic Lifestyle:
How many times have you moved in your lifetime?

How many of your personal artifacts/furniture have you kept through all of your moves? What are they and why have you kept them?

When you move, how do your source moving boxes?

Part 2: post-test

What do you like about the prototype? What do you not like?

Would this work for you?

How does it feel to sit on it? Is it comfortable? Would you use this?

Task 1

Put together both the stool and shelf prototypes from their flat-packed state to their final state, using only a photo of their final state as reference. Sit on the stool once finished.

Task 2

View the prototype webpage, and complete a series of tasks:

a) View information about stools they currently own

b) View information about a couch they have recycled previously

c) Purchase a Minji stool from the website

Section 3:
OBSERVATIONS AND USER STUDY FINDINGS

QUESTIONNAIRE

Goals

Our main goal for the questionnaire was to identify trends in nomadic youth in regards to their personal space and furniture usage habits. The questionnaire was divided into three parts: one pertaining to their living situation, one pertaining to the idea of being an "urban nomad", and one pertaining directly to the prototypes themselves. The questions in these sections were designed to find out our users' priorities in terms of space, location, and what they bring with them each move, to better understand if the Minji system is in fact responding to their needs as a group.

Some questions, such as how many times they move and travel for short period of times, were asked to support our hypothesis of the urban nomad's existence, and to flesh out our potential users in terms of age groups and living situations in this regard, so that we can design furniture specifically for our target, instead of creating a catch-all solution.

The last section of the questionnaire was aimed at finding user's direct reactions to the prototype. We felt it important to ask this question after - and not before - so that users could experience the furniture, and not provide a knee-jerk reaction.

Findings

More than half of the user testing participants (11 out of 20) had moved their living space in average of two to three times in the last 5 years. When the participants moved, they mostly brought small things such as kitchen appliances, books, clothes, and things that have strong personal attachments to. Five out of 20 participants had relocated for short periods of time, indicating a need for a better solution for short-term furniture use.

Participants n our user group mostly bought their furniture from IKEA and second hand stores. Therefore, we can assume participants are familiar with the concept of flat-packed and self-assembly furniture. When they moved, boxes, suitcases, and cardboard boxes were used as the main method to move items from place to place.

Only four participants were not interested in the Minji system, due to:

a) Uncertainty of the product life time or durability
b) A preference for the of reuse second hand furniture
c) The aesthetics of cardboard
d) Potential lack of comfort in longer sitting stretches

Of the users interested by the Minji system, the following points appealed to them:

a) The flexibility of the design due to their high frequency of moving
b) The self-assembly concept is a fun and creative process
c) The flat-packed concept minimize the use of storage's space and cost of moving

Some participants preferred the velcro more as a connector, and some preferred the zipper, but there was no clear indication from user tests that one was better than the other. Gluing down the inner flaps for users saved the time and increased the efficiency of assembling process, as well as improved understanding for users.

TASK 1: FURNITURE ASSEMBLY

Goals

Our main goal was to test the ease (and joy) of the cardboard furniture. Our major concerns in this part - would users be able to conceptualize transforming a 2D object into a 3D object? Would users be able to complete these tasks, with some ease, without instructions? Where were users struggling, and how might we improve the design of the object - or what kinds of instructions - would help them struggle less? Was there a preference for one kind of connector over another?

Findings

Preemptive Zipping:

We found in many of our test cases, people were apt to attempt to zip up or velcro together the box before folding the inner flaps in, or attempting to figure out how to put together the bottom of the box. It was the first thing many people tried, only attempting to fold down the inner flaps after they'd zipped up the zipper or done up the velcro. They knew they had to assemble the shape into something 3D, and there were no hints provided by the structure aside from where zippers/velcro as to how they might achieve this. This lead to confusion on the part of many testers which required intervention from the team to clarify the situation.

Confusion between inner wall of box and bottom:

There was some confusion amongst testers as to how to form the bottom of the box (or the back of the box, in the case of the shelf. The obvious choice for many testers was to attempt to make the inner flaps of the box become the bottom/back of the box. This was only exaggerated by the fact that many users were zipping or velcro-ing the box together before they folded down the sides of the inner wall. Some users attempted to force the sides of the wall down after zippering, but ran into problems when trying to arrange the bottom of the box.

Halfway through our user tests, seeing as this was a consistent problem, the team decided to tape down the sides of the inner walls, thereby removing a step from the process. This improved results greatly and lessened confusion almost entirely on this one particular step.

Task Repetition:

We found overwhelmingly that if users succeeded in completing the stool with little to no trouble, the second task - the shelf - was tackled in almost half the time it took them to do the first. Similarly, if users had difficulty with the first task, their frustration carried over to the second task and they only got more and more frustrated with putting the pieces together.

Sitting/Joy of Use:

We found that initially almost all participants - regardless of their size and weight - were a bit hesitant to sit on the stool, and doubted its structural integrity. This could be due to material choice (thinner cardboard filled the stool) or just general perception of the situation on the part

of users that cardboard could not hold them up. Most users expressed some sense of surprise upon sitting on the stool and feel its sturdiness underneath them.

Velcro vs. Zippers:

As a general trend, there was an even divide between those who preferred velcro and those who preferred zippers. Those who preferred the velcro attachment felt that it was sturdier and stronger than the zipper, while those who preferred the zipper liked it because zippers are mutually exclusive - there were less options and therefore there was less potential to make a mistake.

Stacking:

Users had no noticeable problems stacking the items, aside from the fact that they often forgot to remove the lid of the box before stacking.

TASK 2: WEBSITE USEAGE

Goals

Our main goal was to test the usability of the interface, in terms of time it took users to complete key tasks within the interface (checking information on furniture they've recycled, or buying a piece of cardboard furniture). This information will be used to inform the placement and overall visual design of the interface, as well as to identify any "pain points" within the interface.

Findings

Placement of links:

The placement of links to different sections of the site was visually confusing - navigation for a user's information was primarily along the left-hand side, however navigation to different sections of the site was on the right. There was a visual disconnect with the way the information was presented and what users were expecting, leading to confusion on the user's part when asked to complete one of the main tasks of the interface - buying furniture. In contrast with the fact that the "main" section of the page, in the middle, was designed to scroll downwards, the different directions users had to use to navigate through the page was confusing and nonlinear.

Visual Hierarchy:

Partially a problem due to the low fidelity of the prototype, but visual hierarchy confused users in various ways - they clicked on headers that were bigger when they were supposed to click elsewhere often.

Navigation through pages:
Almost all users used the browser's back button to navigate back towards another page, as opposed to the in-interface links ("Tom N." links back to the starting page). Clearer labelling of navigation within the interface is needed to remove the user's need to use the back button - or to otherwise clarify that functionality for the user.

Section 4:
CONCLUSION

CONCLUSION

There is positive feedback and an opportunity for the concept of disposable cardboard furniture, however there are areas of the prototype which need further iteration. In particular, the stool in regards to assembly and stability, as well as the website in terms of ease of use require further iteration.

PROSPECTIVE PLAN

Re-evaluating and re-design the stool and shelf
Through our user testing, the stool and shelf we will redesign the stool and shelf to have a combination of zipper and velcro connectors as we see fit, but will use the connectors without relying on them for structural support. We hope to incorporate some new materials in the stools

and shelves to strengthen them visually and structurally. Additionally, the inner flaps will be by default glued down, improving flat-packing and self-assembly.

Designing and prototyping the last pieces of the set of disposable cardboard furniture
Using what we've learned about durability and structural strength from this user test, our next step is to design the table and the couch. We hope to explore different kinds of cardboard with these items, but we also need to incorporate greater measures towards the stability of the furniture, as well as maintaining an aesthetic link to the stool and shelves.

Placing the set of furniture within the correct context of place and background to describe the intended goals of the project
As suggested to us, we hope to set our final photography and branding for the project in an appropriate context - a condo, or potentially a micro apartment - to help us communicate the goals and aspirations of the project.

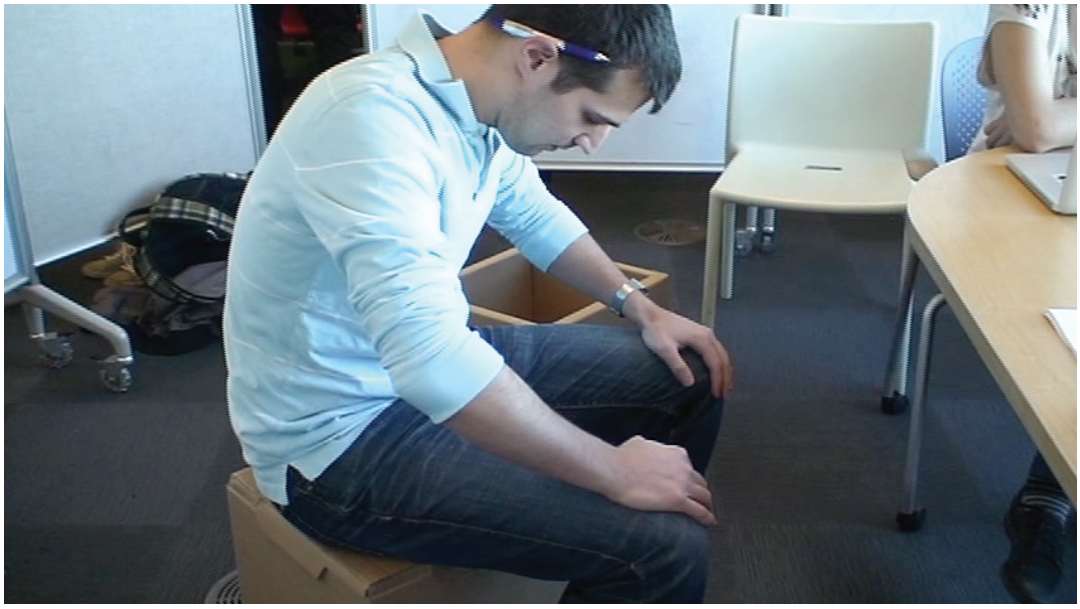
Re-designing the website to perform some major tasks
The website will be redesigned to flow vertically as opposed to horizontally, to respond to users' expectations when interacting with a website on a laptop screen, as opposed to overreaching for touch devices. We hope that this will improve clarity and the user's ability to move through the interface with ease.

Appendix A:
IMAGES & VIDEO

Confusion with velcro - because it isn't mutually exclusive, we found that many users got confuse. This user actually has the box inside-out.

Preemptive zipping: As with many users, as soon as they saw the zipper they wanted to zip it: note that this user has the inner flaps of the stool still unfolded, and is trying to zip too early.

A sit test:
We found that almost all users had some sense of trepidation when sitting on the stool. For most users, however, this fear immediately dissipated as they began to trust and enjoy using the stool.



Appendix B:
COMPLETED QUESTIONNAIRES

Attached.