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SIDE TABLE



DESIGNS ETHICAL ENVIRONMENTAL

DESIGN PORTFOLIO 2023 SEMESTER 1

RESEARCH

WHAT ARE SIDE TABLES USED FOR?

The location of a side table determines its use, a side table placed next to a couch or some chairs may have to hold drinks, TV remotes, headphones, phones, and books while a side table put next to a front door may hold on to hats and shoes, and one put next to a bed will have to hold on to a lamp, medicines and personal/private belongings.



WHAT DO PEOPLE LIKE IN A SIDE TABLE ?

Preferences in function of a side table changes greatly between people, some people want lots of shelves and draws and some want none at all. These preferences are largely personal people who don't want storage do so because they don't want to encourage hoarding and people who want storage want to be encourage things like reading through making them accessible. This does not continue into the visual design where most people prefer open designed with simple, strong lines, curves and textural patterning.



PLYWOOD

Plywood has the potential to be an exceedingly effective material for creating sustainable designs when its components are sustainably sourced and biodegradable. Plywood can make use of more of a log of wood as the off cuts are smaller and can be made out of a larger variety of woods (Rinkesh, 2023). The structure of plywood makes it stronger than solid wood allowing less material to be used (Viktor, 2021). Plywood is made of 2 core components wood and glue, if the wood is ethically and sustainably harvested and the glue is sustainable nontoxic and biodegradable than the resulting ply wood can be sustainably created, used and recycled or composted.



FLAT PACK

Flat pack is a method of product distribution where the product is assembled on site instead of at a store or in a factory. Flat pack products are designed to be packed into flat boxes before distribution, famously almost every piece of furniture Ikea sells is flat pack. The largest benefit of flat pack furniture is the small size of each unit, the small size of flat pack furniture compared to its assembled version allows you to move more units with the same infrastructure saving cost and emission. Combined with the tendency for flat pack furniture to be user assembled flat pack furniture saves hugely on the product's overall costs (Grice, 2023) and shipping emissions. Flat pack furniture allows for greater personalisation adjustability for the user as they are encouraged if not required to assemble the product for specific needs (e.g. shelf height in a cabinet)

DESIGN PROPOSAL

DESIGN PROBLEM

From the empathetic research it was concluded there is extensive range of preferences and requirements for side tables to meet in order to be suitable for an end user. These preferences change widely between people and require many different designs and intern products to be created and distributed. Th requirement for many separate products creates complexity in the manufacturing process, makes logistics more complicated, and increased the floor space required in store. Because each variation requires a separate production process it limits the effectiveness of mass production and increases per unit costs.

The second and compounding problem its consumer interest in ethical and sustainable production, only 1/3 of the people who were surveyed said that they would look for a product with ethically soused materials. This lake of consumer interest makes it the responsibility of the designer to prioritize the ethical and sustainable considerations in the design, production, and distribution of the product.



DESIGN BRIEF

To create a flat pack side table that is easy to assemble without the use of metal fastenings.

To efficiently use materials.

To reduce post processing steps after CNC machining.

To create a stable, strong side table that will stand up to many years of use.

To create a modular design that can be personalised by the end user.

To allow adjustability in shape, height, storage, utility.

To consider anthropometrics to determine the scale and design of the side table.

To consider ergonomics to determine the form of and design of functional elements.

To create a range of modular components.

DESIGN CONSTRAINTS AND CONSIDERATION

CONSTRAINTS

The side table must be sold as flat pack.

Flat pack furniture reduces the space required to transport the product lessening the environmental impact of distribution and lowering the products cost.

The side table's Materials are limited to 15mm thick plywood, wooden dowl and glue.

Plywood and dowls are strong environmentally friendly and can be easily reclud as there are no metal components that need to be removed.

The side table must be made with CNC.

CNC manducating is a fast and efficient process ideal for producing with flat materials such as plywood,

The side table must fit on a 1200mmx900mm sheet of plywood.

The side table must not waste material as it is more environmentally efficient to use less than recycle more.

The side table must have no but joint.

The side table must incorporate strong CNC joinery to manage the limit in metal fastenings.

CONSIDERATION

The side table will encourage personalization through is design and presentation.

The modular design and the requirement for the user to assemble it will encourage the user to make choices to create a personalise product.

The side table will come with / be sold alongside a range of modular components that can be added during and after assembly.

The side table will be able to be customised by the user at the point of assembly and afterwards with supplied components.

The side table can be constructed with little to no tools.

The side table cannot require tools that would be inefficient to ship with the furniture of have the potential to cause injury.

The side table will have a mechanism to stop draws from falling off when pulled enthusiastically.

Through empathic draws that would accidently be pulled out was a common complaint from other side tables used in the past.

The side table will have little to know plastic components.

To simplify recycling and reduce environmental impact the design will avoid plastic.

DESIGN PROPOSAL

CRITERIA FOR SUCCESS

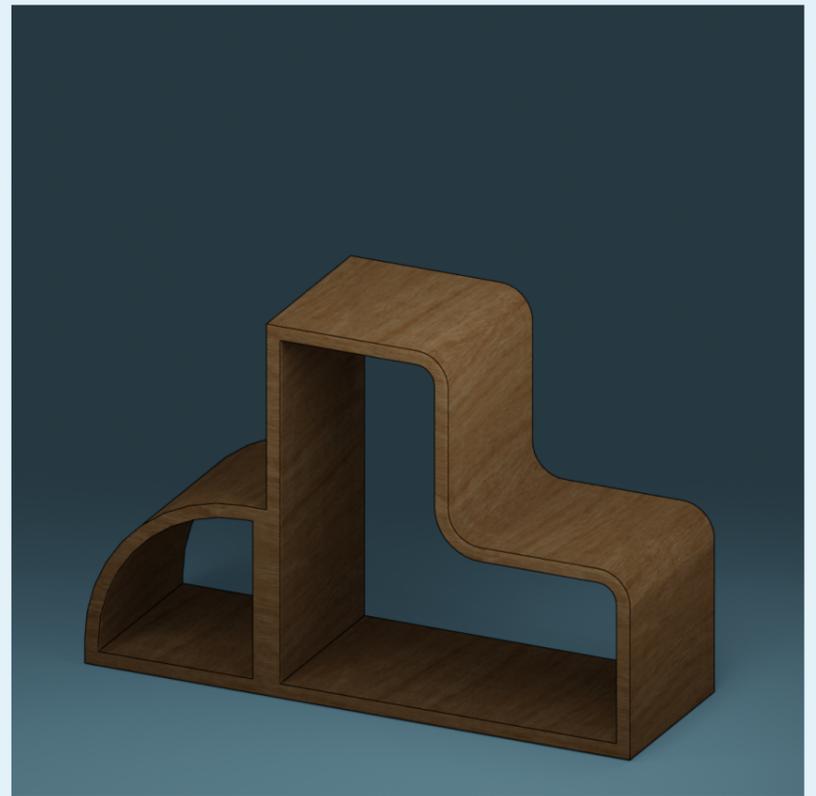
Criteria	Testing methodology
When tugged straight out the draws do not fall out.	Tug on the draw from the handle pulling laterally out if the draw falls out than it is unsuccessful, if it does not fall out this criteria is successful.
The side table is stable under high weight.	Place a 20kg weight on each table surfaces for 1 day. If the side table collapses than it is unsuccessful, if it does not collapse this criteria is successful.
With only the flat pack and the instructions (included in the box) will the side table can be assembled without issue.	Give 50 people the flat pack and have them all assemble the side table than inspect each side table looking for assembly errors. If greater than 5% of the side tables have errors that would lead to structural failure than it is unsuccessful, if less than 5% have errors as described than this criteria is successful.
There are no but joints in the design, all joinery is innovative CNC joinery.	Inspect all the right angle joins if any are but joints than is criteria is unsuccessful if there are no but joints than this criteria is successful.
The design efficiently uses materials with little waste.	The weight of unusable material is less than a quarter of the finish side table. Unusable waste defined as pieces of plywood smaller that 15mc^2 . if the weight of waste is more than one quarter this criteria is unsuccessful if there the waste is less than one quarter than this criteria is successful.
With only the flat pack and the instructions (included in the box) the modules will be assembled and implemented without issue.	Give 50 people the flat pack and have them all assemble the module than inspect each side table looking for assembly errors. If greater than 5% of the side tables have errors that would lead to structural failure than it is unsuccessful, if less than 5% have errors as described than this criteria is successful.
the side table and modules have usable surface at ergonomic heights.	Consider the anthropometrics of different positions that an individual will be using the side table from and test if you need to strain to use the side table. If the side table is easy to use from all lucky positions than criteria is successful if not that the side table unsuccessful.

IDEATION

Can't make flat peaces curve like that with just CNC need a different way of incorporating curves.

Different sized curves separated by sharp edges make the table look larger.

The solid sides give a heavy space filling look.



The hollow sides give a light and airy look.

The unbalanced top looks unstable and as if it is about to fall.



Curved peaces are to thin they look unstable and probably will be.

The form is to simple and square.

The tops are inconsistently curved and ugly.

The many layers make the table look large and unwieldy.



IDEATION



DRAWS OR NOT

Having wooden slides to allow draws to be added in also supply half thickens ones if the draw is not wanted to cover up the gap.

The brace of the side table is not rounded to make it look more stable and to allow for better storage.



HEIGHT ADJUSTABILITY

Wooden dowel fit through slots in the lower box and on the arms of the upper box to hols the upper box at an specific height.

JUSTIFICATION

WHY THIS DESIGN

This design fills best the requirements of the brief and empathetic research. The design incorporates modularity for its storage which was the element that had the most variation of opinion in the empathetic research. This is done through the separate wooden draws and sliders with can added to the design during assembly or have half-length sliders added in to fill in the gap and fill the form. This choice can be made to by the user to fit their preferences and have their choice not impact the quality of the product. The visual design of the table is open and smooth, the lack of a backing allows it to be used in a space where it is not up against a wall as it has no back side. The smooth corners give the design a softer feeling that combines with the hollow back to give the design an airy lightness. The base of the design is flat with helps simplify storage and make it look visually stable. The design is needed because it increases the efficiency of mass manufacturing, recycling and extending the products life span by creating one modular design instead of many similar designs. This allows there to be only one production line for each core component reducing the size and complexity of the manufacturing process and simplifying distribution. The modular design also allows the product to be in used longer as broken pieces can be replaced and the side tables functions can be changed over time especially with the implementation of more novel modules. The side table is constructed of only plywood and biodegradable glue so it can be easily recycled without contamination from metal and plastic components and fastenings.

THINGS TO BE ADDRESSED

The design will need to be made to follow the limitations of the CNC proses, the curved edges need to be changed as we do not have the ability to bend the wood in the allowed manufacturing method. Anthropometrics needs to be considered when determining the scale of elements in the design.

