



ELAINE MANSURE

Virtual Love



IND 4100, Fall 2022
Professor Richard Prisco

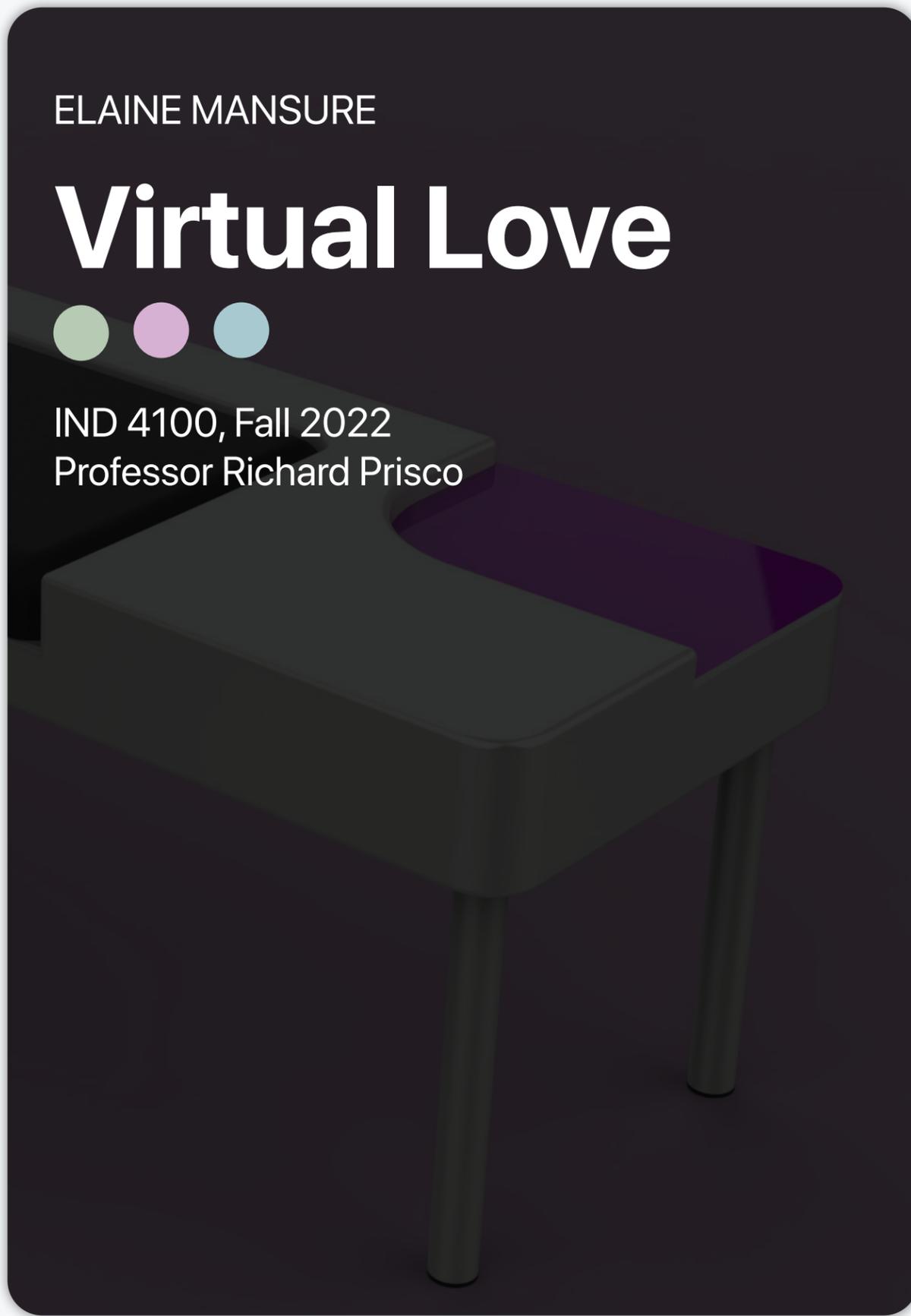


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Brief



Design an original seating piece that can be reproduced in a production setting. This seat can be influenced by a variety of inspirations, but a clear visual language should be established. The form, function, and intended setting should all be important factors in the design.

Research



To begin ideation, I needed to contextualize my direction through developing a visual language and a functional language/concept that could move my piece forward. I became interested in the idea of creating a tension or dichotomy between the visual language and the function of the piece: specifically, the visual language of Apple combined with the function of a loveseat.

Research: The Visual Language of Apple



Repetition of form in a grid structure, simple geometry with filleted edges, pops of vibrant color.



Slightly muted main colors accompanied by white accents, rounded forms, softened edges.



Thin profiles, subdued and integrated details, contrasting finishes (satin and gloss).



Simple forms with unobtrusive details; contrast between rectangular and circular forms, material contrast.

Visual Language Summary

The visual language of Apple creates a unified and recognizable aesthetic across a variety of products. Formally, the pieces are defined by rectangular forms that are softened by filleted edges. Contrasting details often take circular forms, and are typically offset in a different color, finish, or texture. The transition between primary and secondary features (such as the phone body and home button) is smooth, with contrasting banding around some features. Muted colors with a satin finish characterize primary components, while secondary features (such as buttons) are typically white with metallic detailing. Thin and sleek overall forms are prioritized, with few distracting details.

Materials: Key Points

The material language of Apple is not identical for all existing products; however, several common themes exist. Metals with satin finishes are commonly used for the main components of the electronics, and these pieces often resemble metals (e.g. rose gold or silver) or muted colors. White plastic secondary features often have a flat finish, and metallic tertiary features provide definition. Within a piece of furniture, I planned to use materials that mimicked the finish of Apple's general material language, without necessarily using the original materials themselves.



Contrasting banding as a detail, chamfered inset features.



Contrasting components align seamlessly and flush, creates a unified general form.



Gentle curves/protrusions allow for geometric forms to have weight and depth.



Reduced forms utilize contrast of texture and finish to define details.

Research: The Function of a Loveseat



A seat that fits two people can be very snug - affects the intended user/setting (e.g. home chair vs. office).



Possibility: experiment with direction of sitting? A two person seat does not have to be a traditional "loveseat."



To me, this two-person seat is more functional than formally interesting. However, one of the functions that seems important is holding drinks.



Placement of features affects the experience of each user. One user of this couch will have an armrest; is this something to think about?



Form itself can indicate whether one or two people should sit. This swing is too long for a traditional swing; to me it indicates sharing.



Is there a way to make the seat "convertible," e.g. only seat two people when they both want to sit (and otherwise fit one individual)?



Interesting: the idea of one person sitting affecting the other's experience.



Do seats for two people have to encourage interaction? Could they encourage separation?

Function Inspiration

The function of "seating two people" is rather broad, with a variety of potential solutions. From the variety of seating solutions I viewed, the biggest takeaway that I developed was that comfort is not the solitary function of a "loveseat." While most loveseats are meant for use in a home, and, as a result, prioritize comfort over style, I thought that the visual language of Apple might not be indicative of comfort. Though I looked at a variety of seating solutions, ranging in degrees of eccentricity, it seemed to make more sense to prioritize more simple forms (rather than more experimental ideas, e.g. the seesaw). The most impactful aspect of this portion of my research was being able to come to a conclusion that I did not have to use a traditional "loveseat form" in my ideation.

Synthesis



This accelerated research process allowed me to quickly define a direction around which I could ideate and move forward. Creating language for the visual, material, and functional languages of my piece oriented my thinking towards a focused prompt: design a seat that formally references technology (namely, through the visual language of Apple). Encourage intimacy through the design of the piece.

Design Opportunity



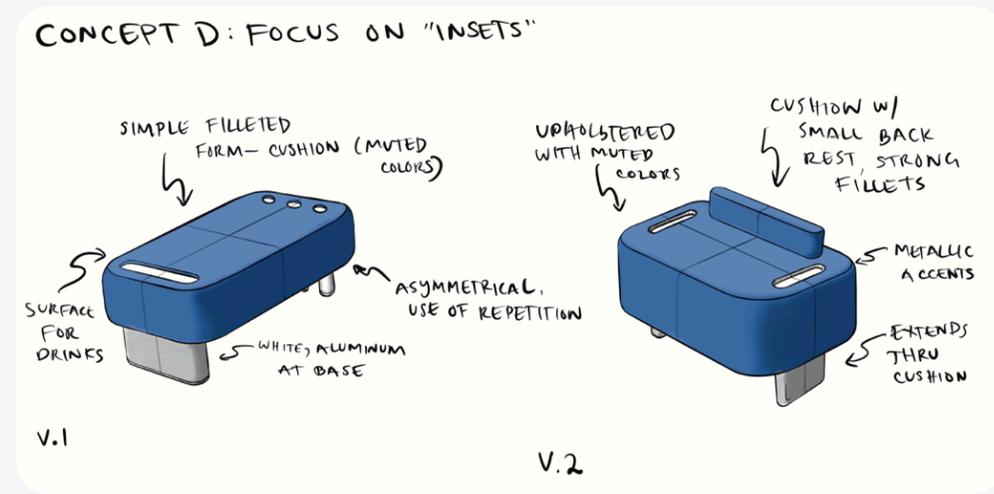
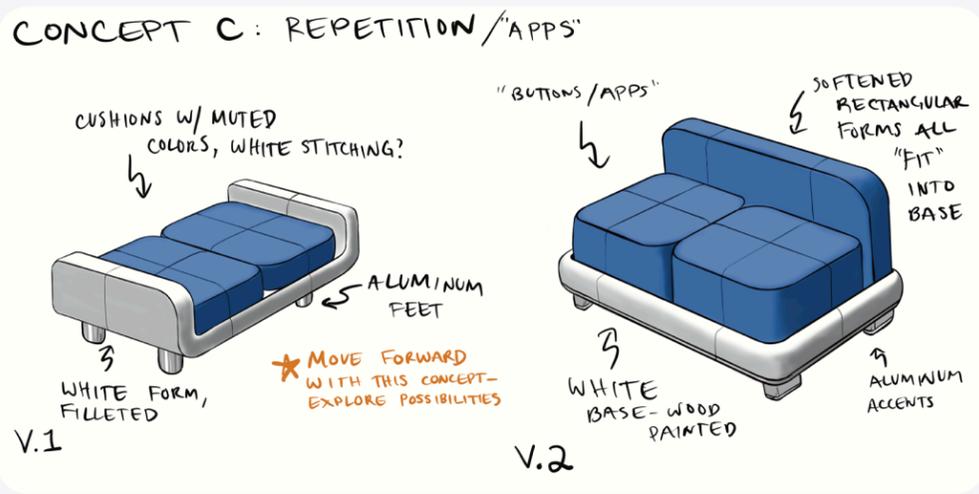
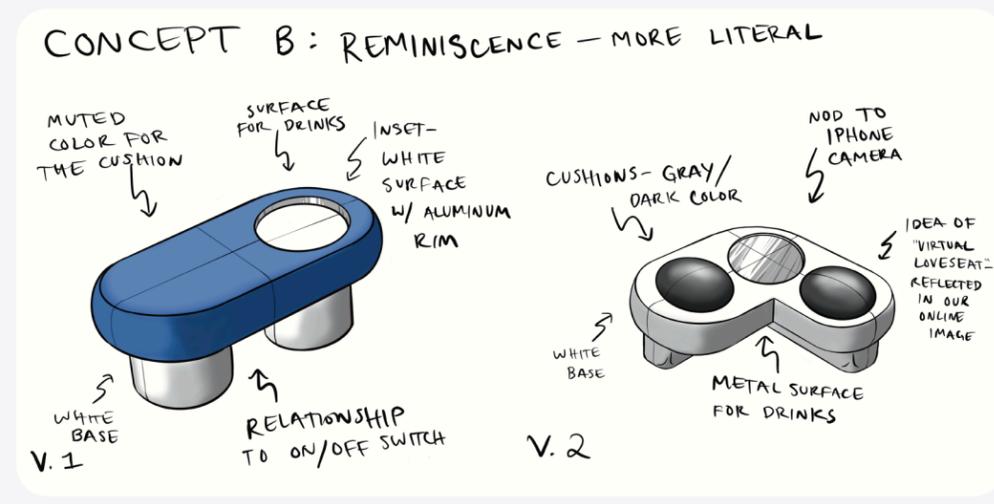
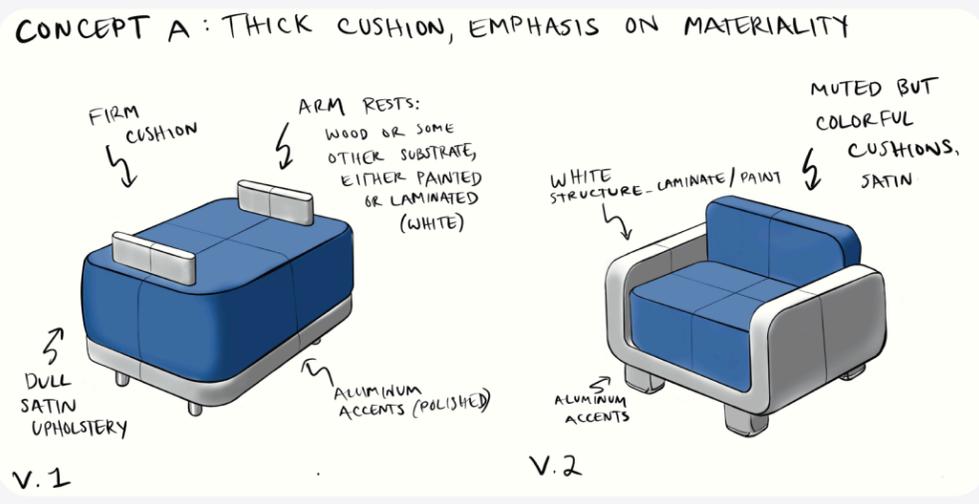
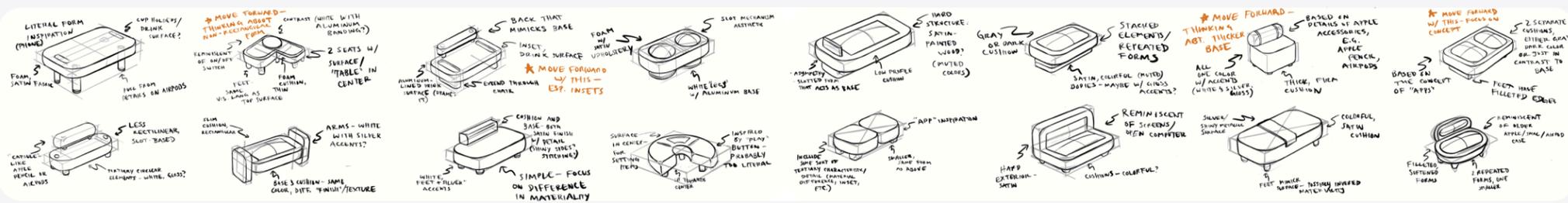
After becoming acquainted with the visual language and function of my piece in this capacity, I was able to define my design opportunity: to create a formally engaging functional loveseat, with the underlying conceptual question evident in the final design.

Development



The process of developing my piece moved from brainstorming to a final concept, with constant peer feedback and discussion guiding my process.

Development Phase 1



Initial Ideation

To begin ideation, I focused primarily on formal qualities over comfort or pure function. Initially, I created many thumbnail sketches from which I could pick elements to expand upon. I then created two concepts per idea. The ideas that I focused on were:

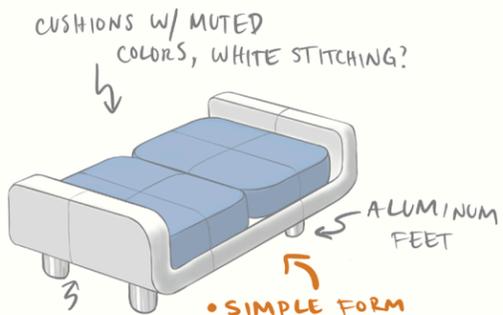
- A: Incorporating a thick cushion, and focusing on materiality to convey the visual language of Apple,
- B: Establishing a more literal reminiscence to Apple's visual language through creating forms that remind the user of an "on/off" switch or a lens,
- C: Focusing on the idea of "apps" or a repetition of squares with rounded corners,
- D: Pulling from the details of Apple's formal language, namely, the insets that are featured in many products.

For all of these concepts, materiality was comparable; a white structure (with a variety of substrate options) combined with colored cushions and aluminum accent pieces.

I chose to further pursue Concept C, Version 1, due to its simple form that I felt best represented a technological visual language.

Development Phase 2

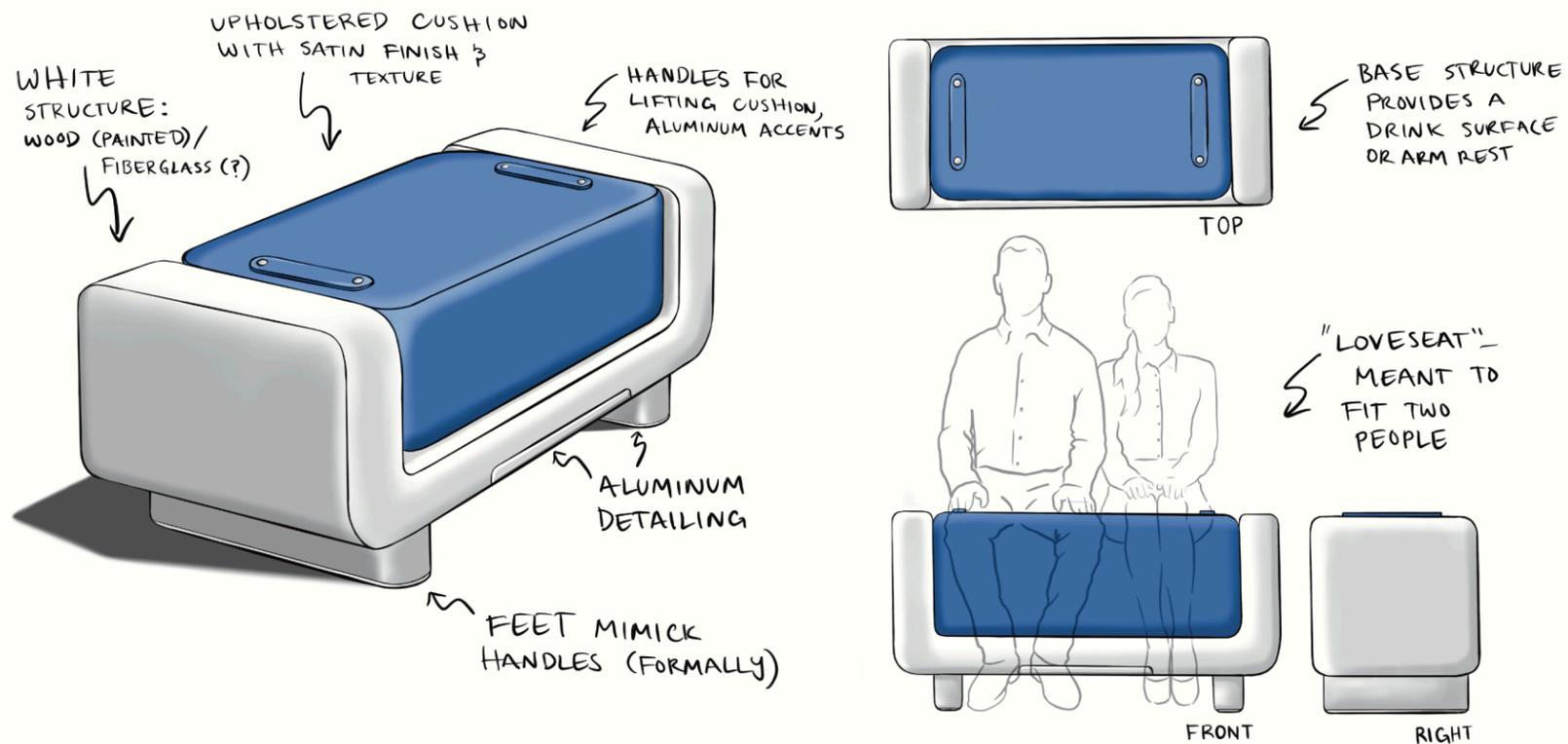
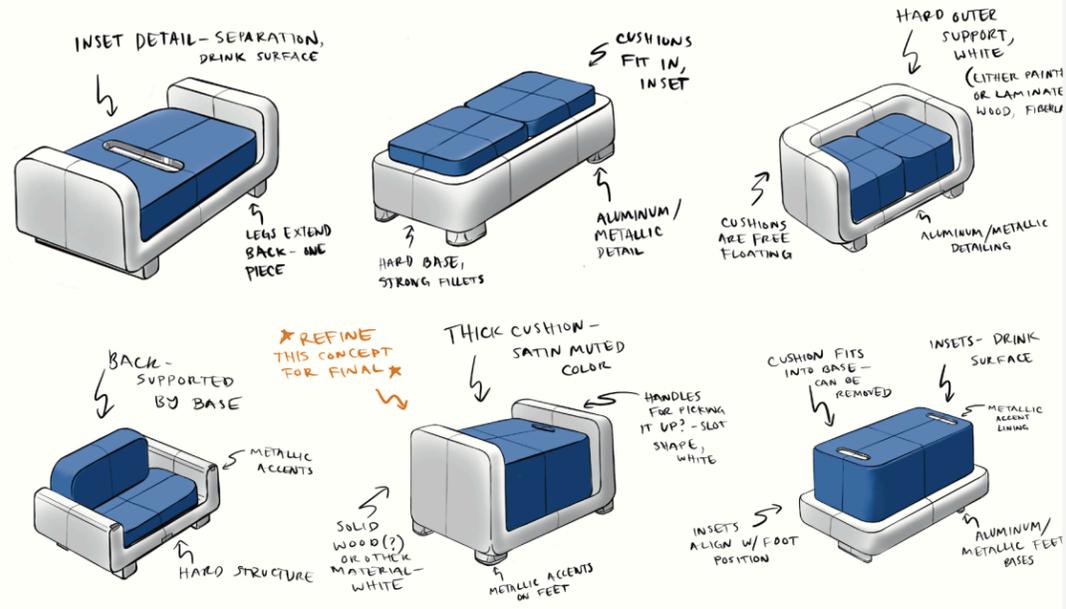
EXPLORING CONCEPT C (V.1)



- SIMPLE FORM
- "WRAPPED" BASE
- SUBBED CUSHIONS
- SUBTLE ACCENTS/ FEATURES

GOALS TO INCORPORATE

- | FORM | MATERIAL | FUNCTION |
|--|--|--|
| <ul style="list-style-type: none"> • REPETITION, SOMETIMES IN A GRID • MUTED COLORS + WHITE ACCENTS + METALLIC DETAILS • THIN PROFILES • FILLETED EDGES • SLEEK - NOT OBSTRUCTIVE | <ul style="list-style-type: none"> • COLORFUL MATERIAL W/ SATIN FINISH (UPHOLSTERY?) • WHITE, SEMI-MATTE (PAINT / LAMINATE?) • METALLIC DETAILS (ALUMINUM?) | <ul style="list-style-type: none"> • ALLOW TWO PEOPLE TO SIT • POSSIBLY ALLOW FOR DRINKS TO BE SET DOWN? |



Delving Deeper

The formal qualities of my past Concept C, Version 1, inspired me to develop a series of related concepts. I liked the simplicity of the original concept, as well as its subtle features such as its aluminum accents and "wrapped" base. I created six concepts based off of these elements, pictured in the upper image.

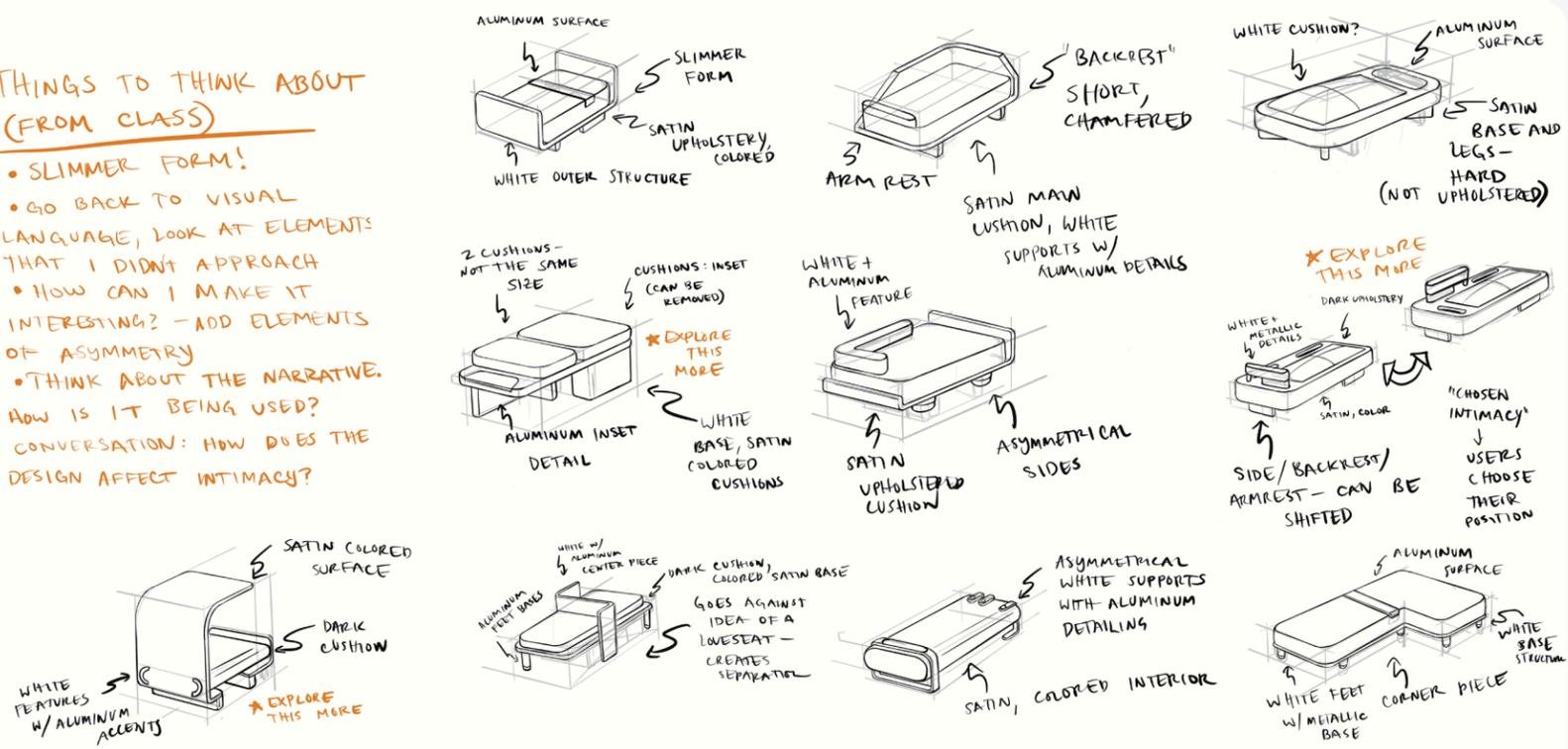
From these six concepts, I refined my ideas into a single concept (lower image). This seat features a white structure that wraps around a thick upholstered cushion and is finished with aluminum accents that mimic details in many of Apple's products.

Upon presenting this concept to my peers, I was encouraged to focus on the formal language of Apple more dramatically, and put even less emphasis into what I typically think constitutes a "loveseat." I was also pushed to incorporate more visual interest into my designs through asymmetry and less stagnant forms.

Development Phase 3

THINGS TO THINK ABOUT (FROM CLASS)

- SLIMMER FORM!
- GO BACK TO VISUAL LANGUAGE, LOOK AT ELEMENTS THAT I DIDN'T APPROACH
- HOW CAN I MAKE IT INTERESTING? - ADD ELEMENTS OF ASYMMETRY
- THINK ABOUT THE NARRATIVE. HOW IS IT BEING USED?
- CONVERSATION: HOW DOES THE DESIGN AFFECT INTIMACY?



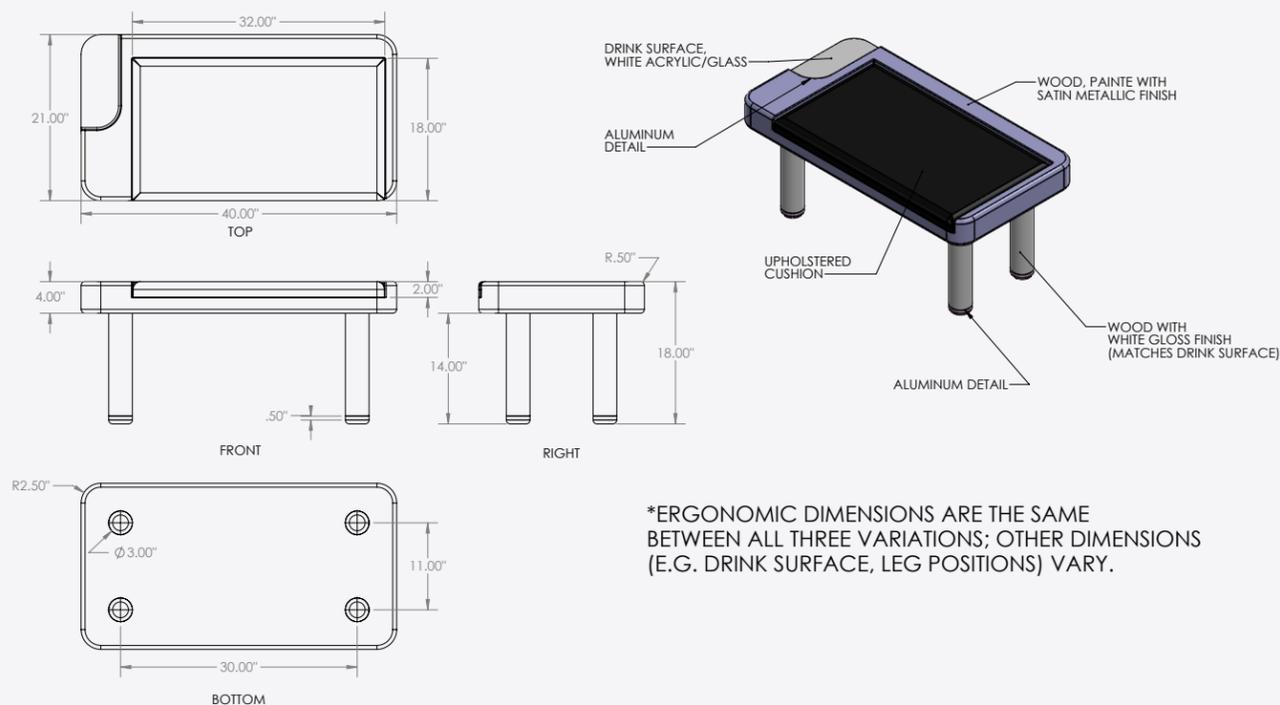
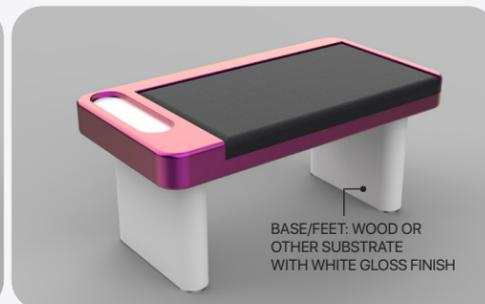
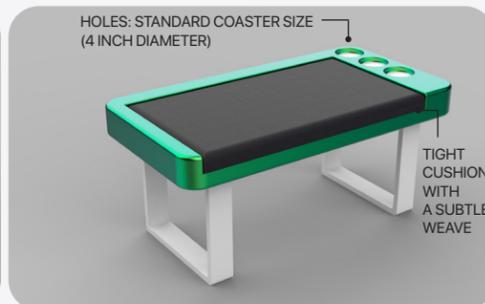
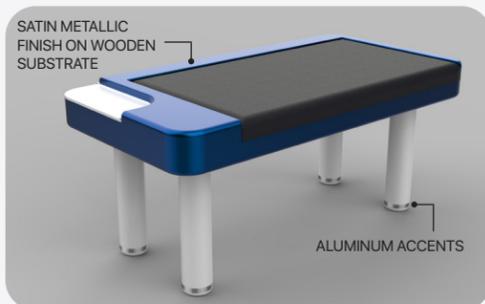
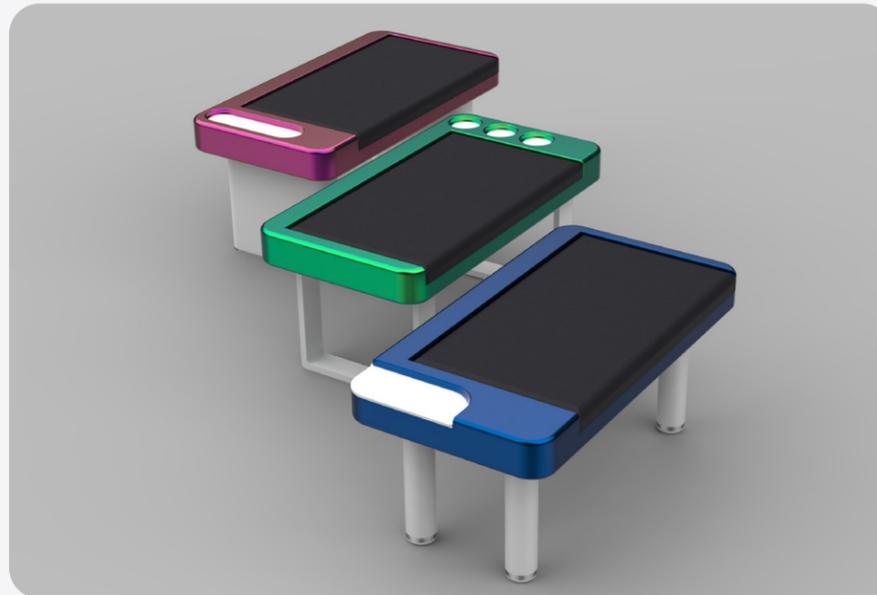
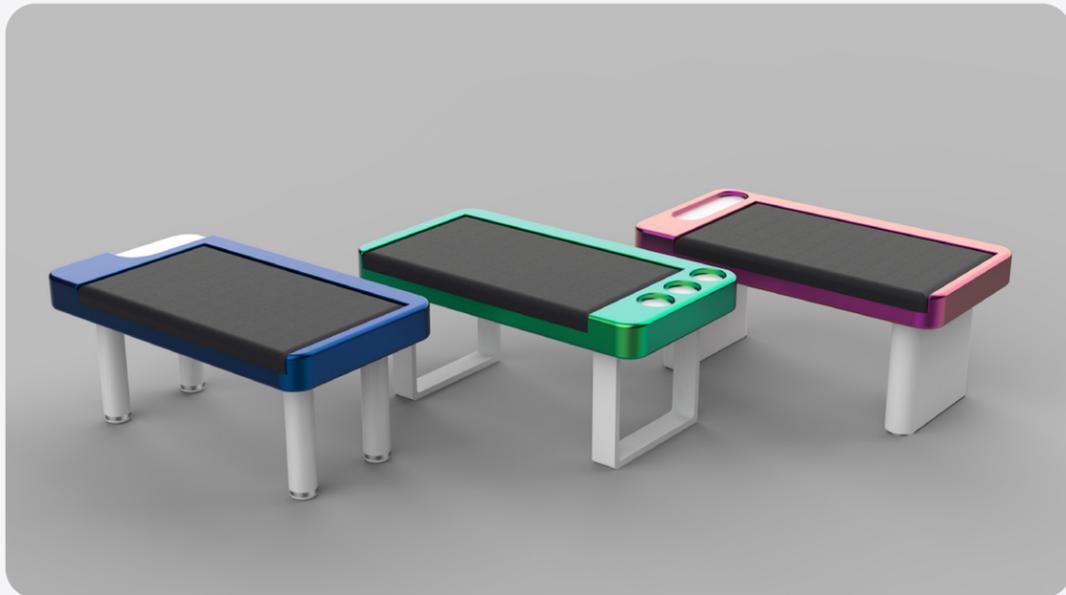
Exploring Forms

Based on previous critique, I developed several goals to achieve moving forward. These included prioritizing a slimmer form that better fit Apple's visual language, approach aspects of Apple's visual language that I had not previously, adding elements of asymmetry and interest, and creating a conversation or narrative around the piece: how will my piece approach intimacy?

With these goals in mind, I created a variety of thumbnail sketches that addressed these issues. Of the sketches, I expanded upon three ideas (lower image). All of these concepts approached the idea of intimacy in slightly different ways; the leftmost concept forces the users to share a drink surface, the middle concept creates a private space, and the concept on the right has a movable "arm" that biases one user, forcing communication between the users.

I received generally more positive peer critique on these concepts in comparison to the previous concepts. The leftmost concept was seen to be the most successful in conveying what I intended related to combining the Apple visual language with "forced intimacy." I was encouraged to experiment with creating a series of seats based on this design.

Development Phase 4



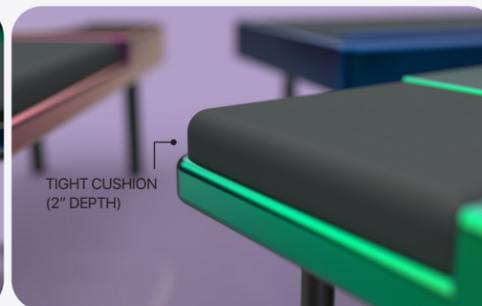
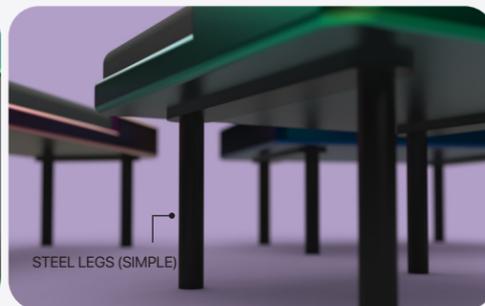
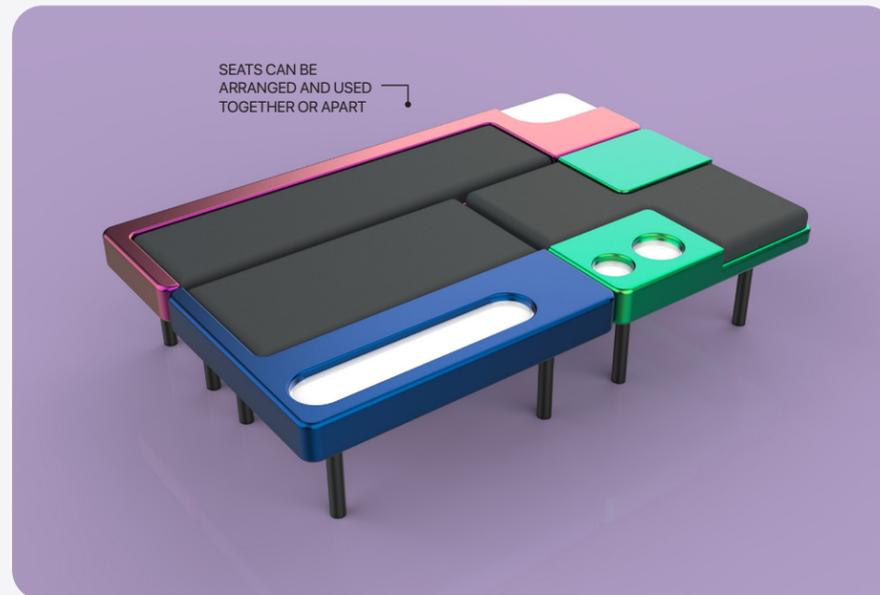
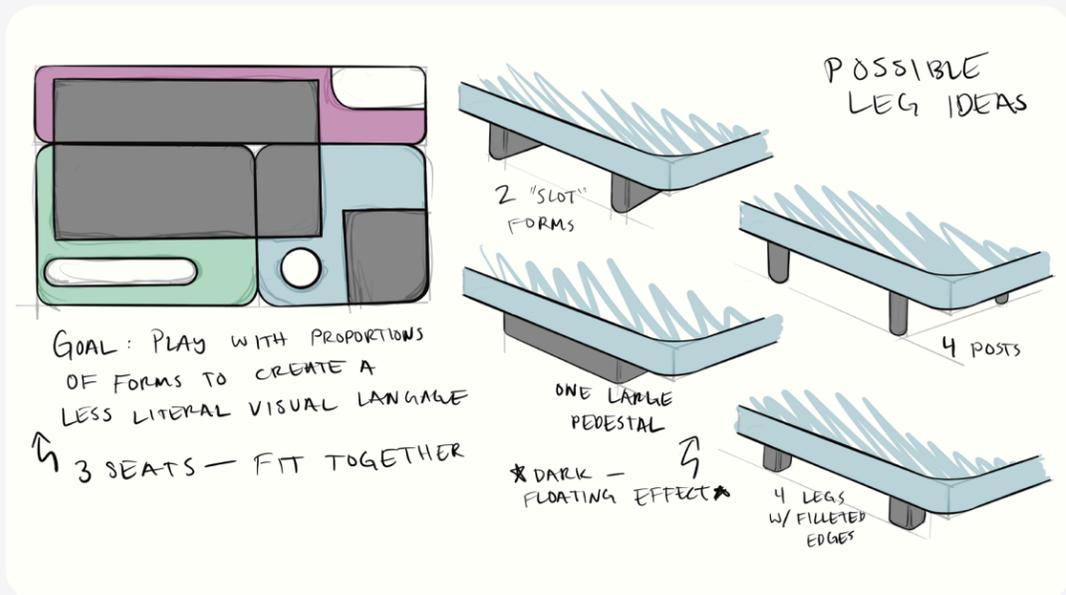
*ERGONOMIC DIMENSIONS ARE THE SAME BETWEEN ALL THREE VARIATIONS; OTHER DIMENSIONS (E.G. DRINK SURFACE, LEG POSITIONS) VARY.

Creating a Series

Moving from previous critique, I explored the idea of creating a series of three similar seats based on the leftmost concept in the prior round of ideas. The goal of this ideation was to mimic the idea of a variety of similar products existing within a collection (as often seen in the marketing of tech gadgets). Conceptually, I wanted these pieces to be formally cold, reading as technological, but encourage intimacy through including a small seat surface for two people and a drink surface that must be shared between the users. I planned on constructing the seats using a substrate such as MDF or wood that was painted or coated in a satin metallic finish, with a thin cushion, acrylic drink surface, and metal legs.

Peer reception of these concepts was positive, especially related to the material language and forced interaction between the users. However, I was encouraged to explore forms that were less directly reminiscent of an iPhone. The close resemblance of these pieces to a smartphone seemed to "give away" the concept of my piece too quickly, not allowing the viewer to come to their own conclusion. I was encouraged to further develop this concept to depart from the form of the iPhone, while still maintaining a similar material language and intended user interaction.

Development Phase 5

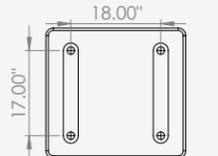
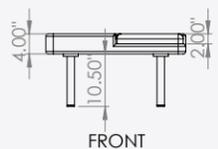
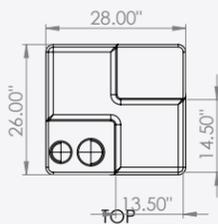


A Finalized Direction

Based on the idea of moving away from the direct form of the iPhone (while still maintaining similar materiality and general forms), I designed a series of loveseats that interact together, yet can exist on their own, apart. Each seat requires the users to sit close to one another and share a drink surface. The proportions of the seats are not reminiscent of a particular technological gadget, but rather, indicate the Apple brand through their materiality and details.

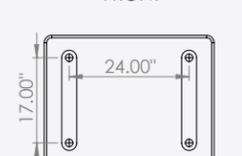
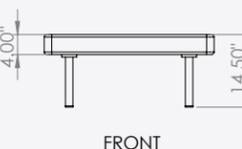
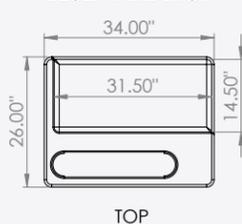
This concept received positive feedback from peers with minor design changes, and I was ready to move towards the prototyping phase of development.

GREEN VARIATION



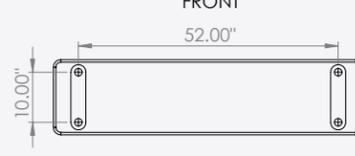
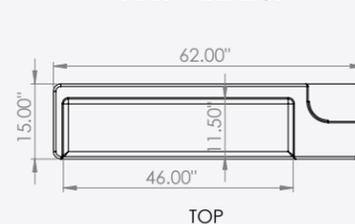
BOTTOM

BLUE VARIATION



BOTTOM

PINK VARIATION



BOTTOM

Prototyping

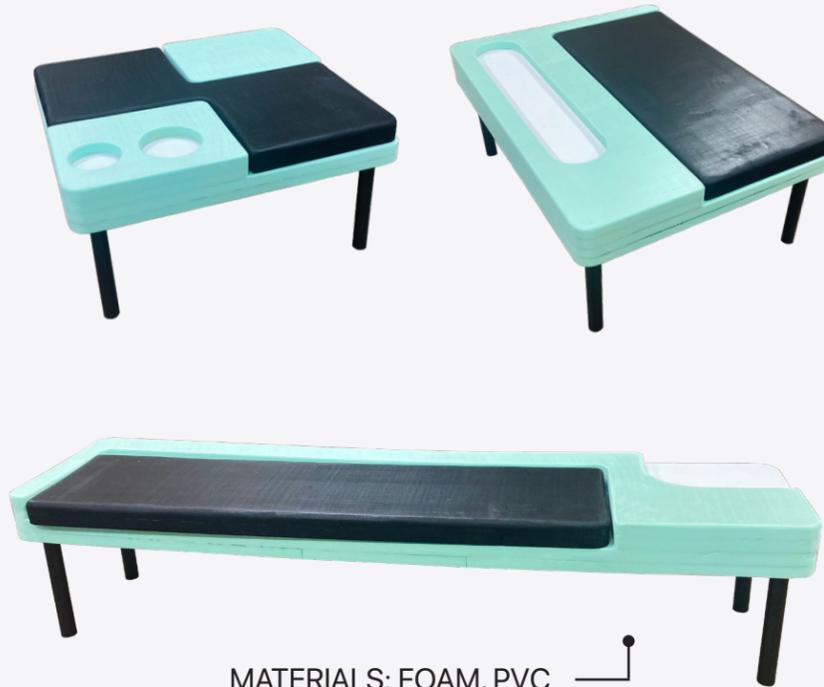


The process of creating a full-scale prototype of my pieces allowed me to test the scale, user interaction, details and features of my piece before moving into the phase of building my final prototype.

The Prototyping Process



ALL SEATS TOGETHER



MATERIALS: FOAM, PVC PIPE, WATER-BASED PAINT

A Full-Scale Model

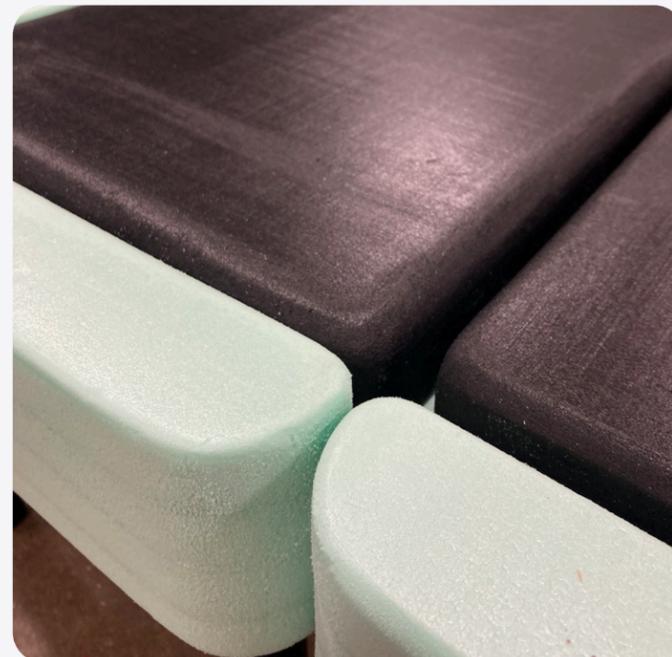
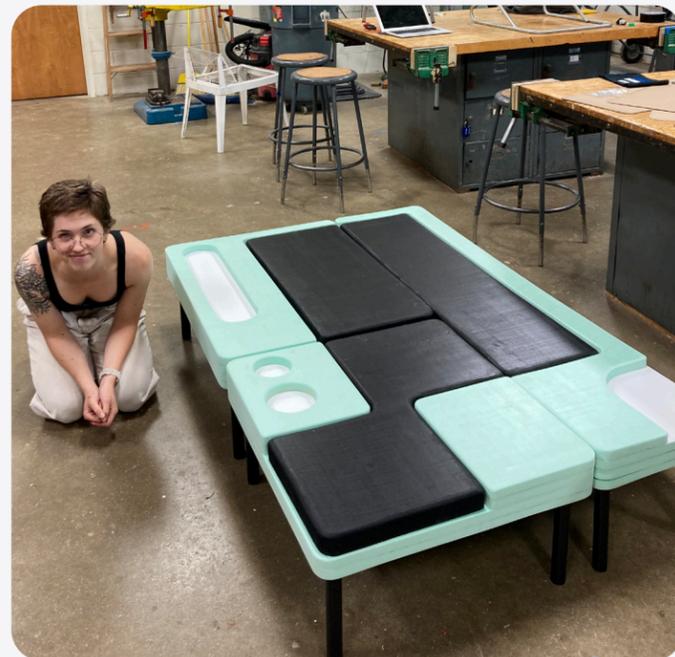
Because I was planning on using CNC milling to produce portions of my final prototype, creating my full-scale model out of CNC-cut foam was a logical method to be able to test issues that may arise during production. I used 1 inch low-density foam, PVC pipe, and water-based paint to create this model.

Creating this model at a 1:1 scale helped me better understand my concept in three major ways:

1 - It allowed me to view the scale in relation to the human body. Based on this, I decided that I liked the proportions but would increase the height of the seat for the final prototype.

2 - I was able to test the general production methods that I would use in the final prototype (e.g. using CNC milling to cut profiles). I realized that I would need a solution for aligning the stacked profiles in the final prototype.

3 - Details became easy to evaluate. I decided that I would increase the size of some roundovers, make the cushions slightly larger, and other small details based on being able to see the forms in person.



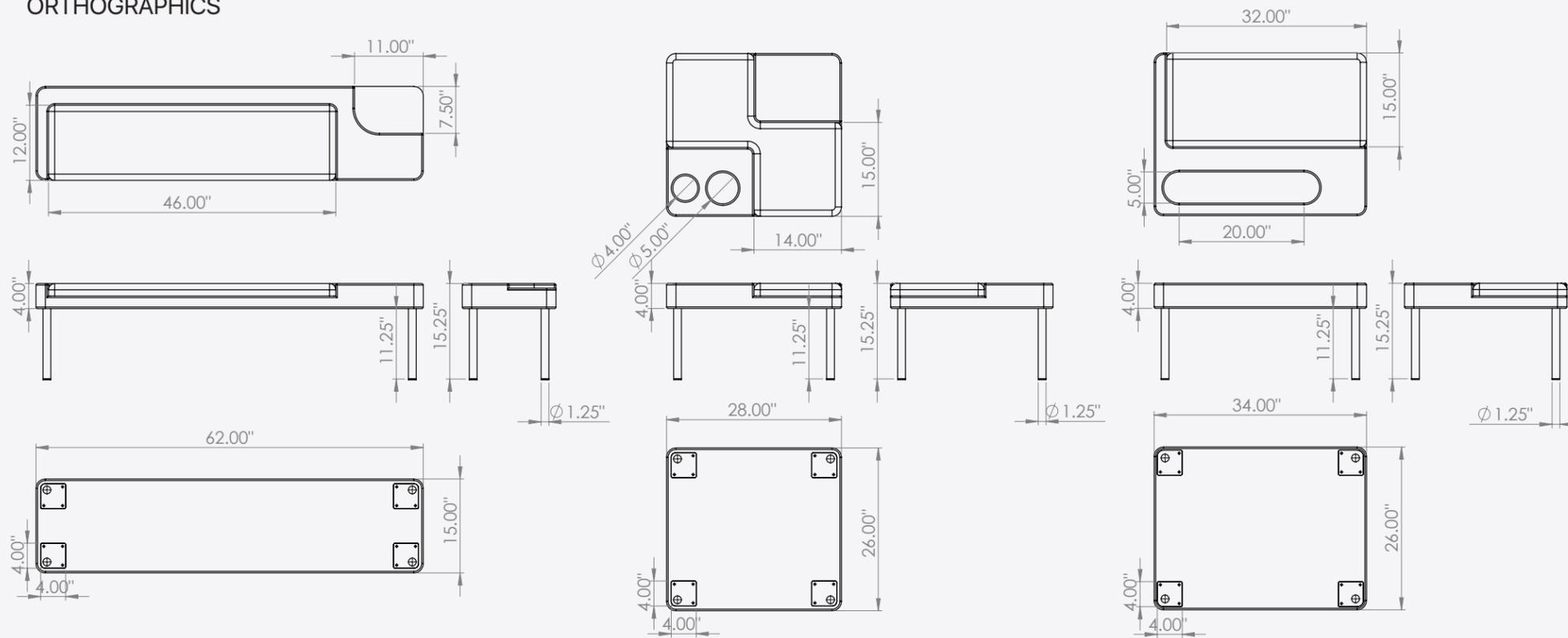
Final Concept



After research, ideation, and creating a full-scale model, I was ready to begin the fabrication of my finalized prototype.

Engineering: Orthographics and Modeling

ORTHOGRAPHS

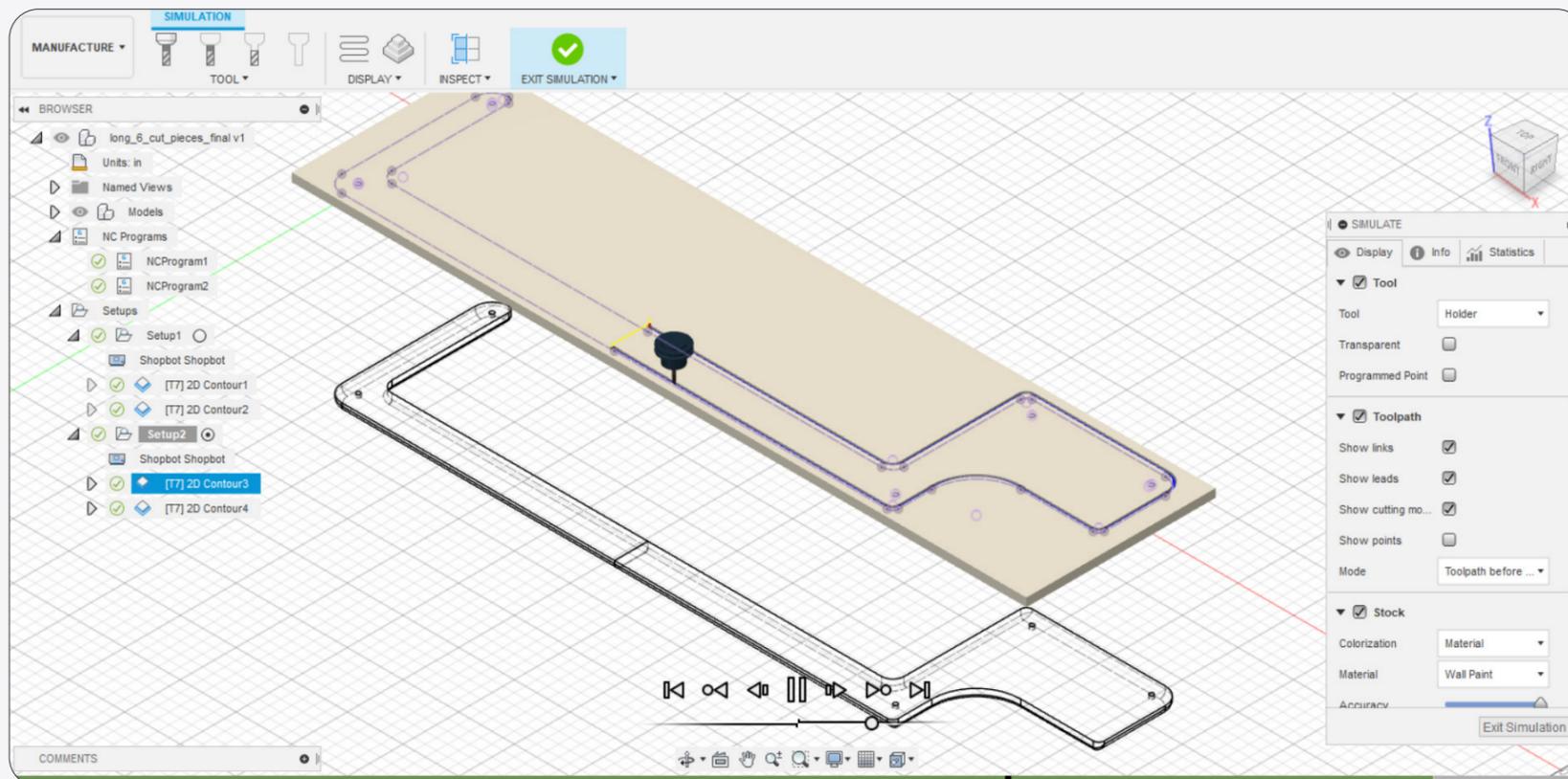


Utilizing 3D Modeling

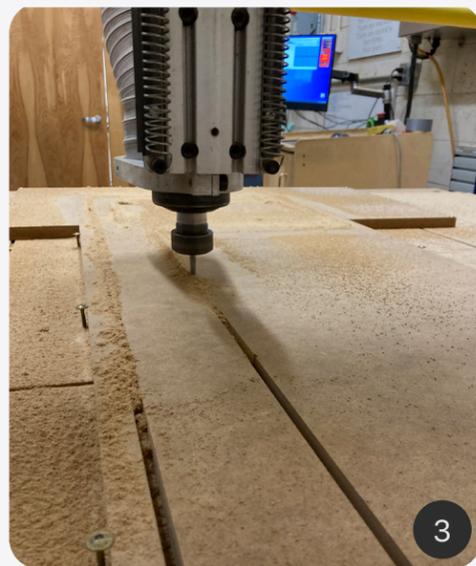
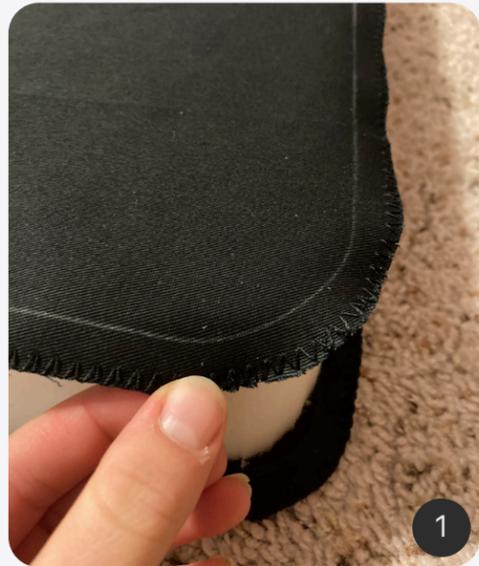
Throughout the course of designing and fabricating my finished prototype, utilizing a variety of computer processes continually aided my work.

Creating orthographic views from my 3D models helped me test interacting proportions, scale, and how the individual pieces worked together when aligned. It was helpful to be able to reference my models and orthographics when making necessary changes throughout my process.

I cut eighteen profiles out of MDF to create the main bodies of my pieces. To do this, I utilized CNC milling. Programming the cutting path (as indicated in the lower image) and simulating these cuts were both necessary steps in setting up a file for CNC milling, and also helpful ways to break down my piece into many components, allowing me to discover any problems that may have been previously overlooked.



Production Process

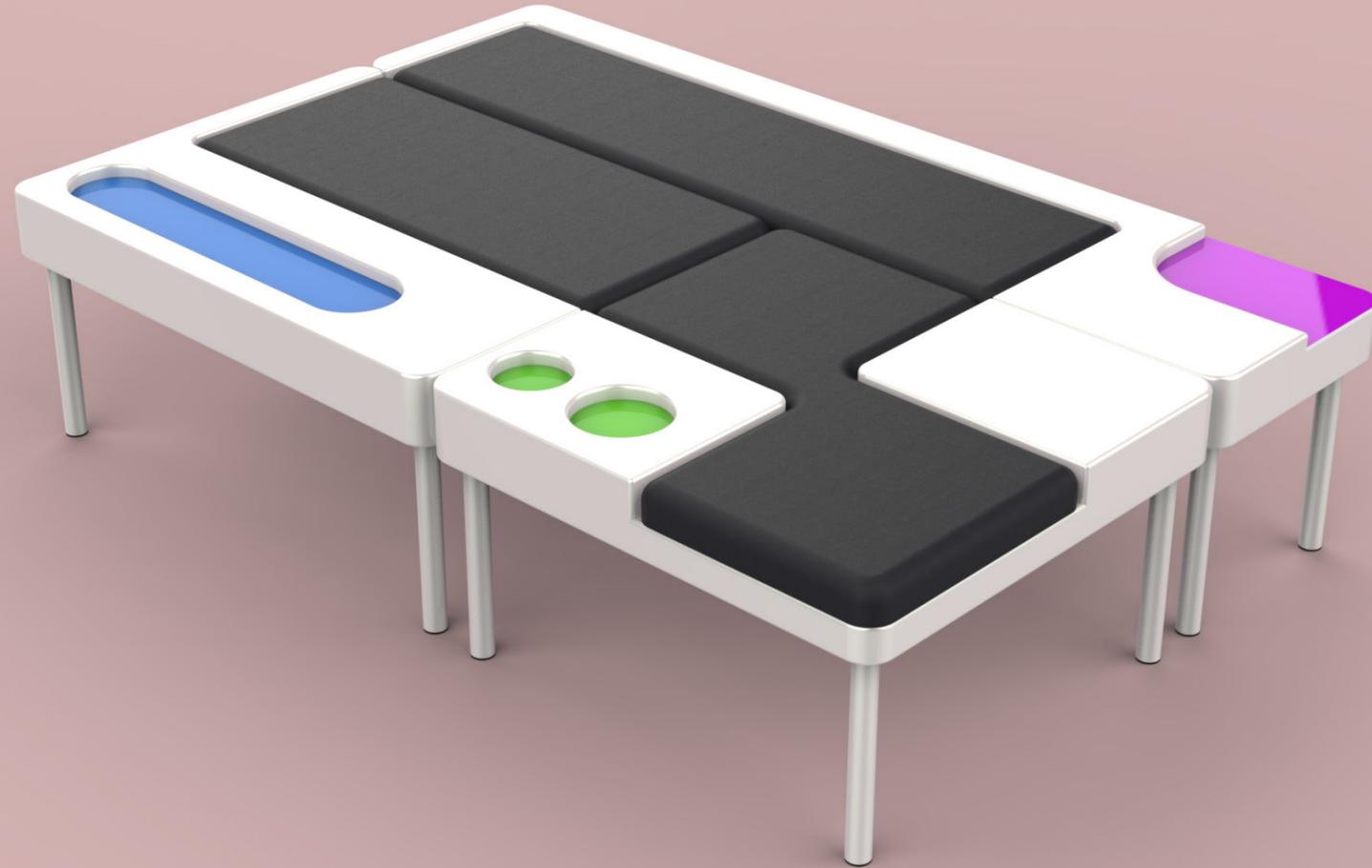


The Fabrication Process

Though there were many intermediate steps to those pictured on the left, the main points are included. Each below step corresponds to the image with the same number on the left:

1. Sewing custom upholstered cushions that were custom cut to the recesses on the seats,
2. Cutting MDF to perfectly fit a pocket jig,
3. CNC milling the layers of each loveseat,
4. Aligning the profiles,
5. Using a router template to cut recesses into which the leg plates can fit,
6. Adding t-nuts into the base before glue-up,
7. Using dowels to align MDF profiles,
8. Gluing up the profiles in stages,
9. Flush trimming the glued-up pieces, rounding over necessary edges, and sealing end-grain with automotive sealer,
10. Coating the structures in spray vinyl, white lacquer, and clear lacquer mixed with automotive pearl powder,
11. Using a custom jig to weld steel legs into custom laser-cut plates,
12. Finishing the welded legs with a white base coat and pearlescent lacquer before assembly.

Final Renderings



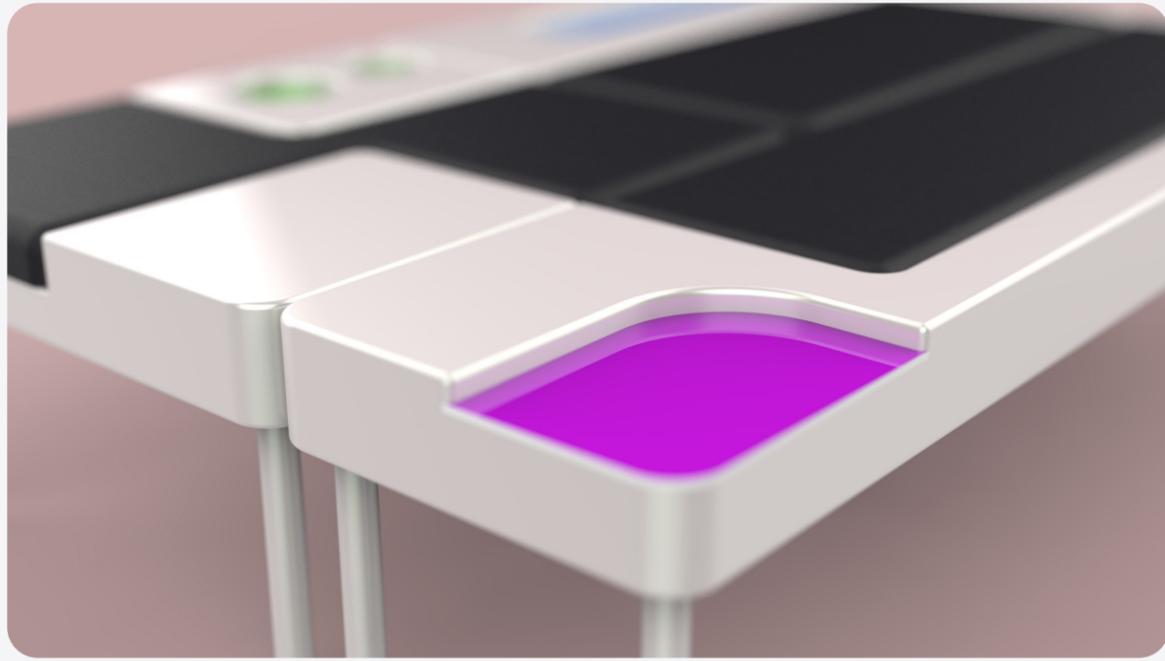
The Finalized Concept

Over the course of fabricating the finished prototype, several details changed from my concept; plates welded to the legs allow for easy assembly and are inset into the bottom of the pieces, threaded inserts increase durability in screwing the legs onto the base, and, most notably, the color scheme adjusted to allow the most colorful components to become details, rather than predominant features. The choice to alter the color scheme was based on the idea of creating a more unified and sleek appearance while still nodding to the vibrant colors featured in Apple products such as the early iMac G3.

Conceptually, the seats allow the user to make their own conclusions about the interactions between technology and intimacy. The seemingly cold formal language of the pieces is not typical for a loveseat, yet each seat is evidently intended for more than one user. The placement of each drink surface is deliberate, causing the users to have to share a physical space. Whether the user understands technology to disrupt or encourage intimate relationships, Virtual Love stimulates questioning.



Final Renderings: Details



Features and Details

Virtual Love features:

- A pearlescent white body
- Colorful acrylic drink surfaces that are shared between users
- Slim cushions with hidden zippers
- Removable legs that lie flush with the underside of the seat
- Non-slip plastic feet

Final Physical Prototype



Final Prototype Materiality

Virtual Love's final prototype features:

- Main body: CNC-milled MDF substrate with a vinyl coating, white lacquer, and automotive pearl,
- Drink surfaces: laser-cut, painted clear acrylic,
- Legs: steel tube stock welded to custom laser-cut plates and finished with a white base coat and automotive pearl, plastic end caps,
- Cushions: 2 inch upholstery foam fitted with a cotton twill casing.

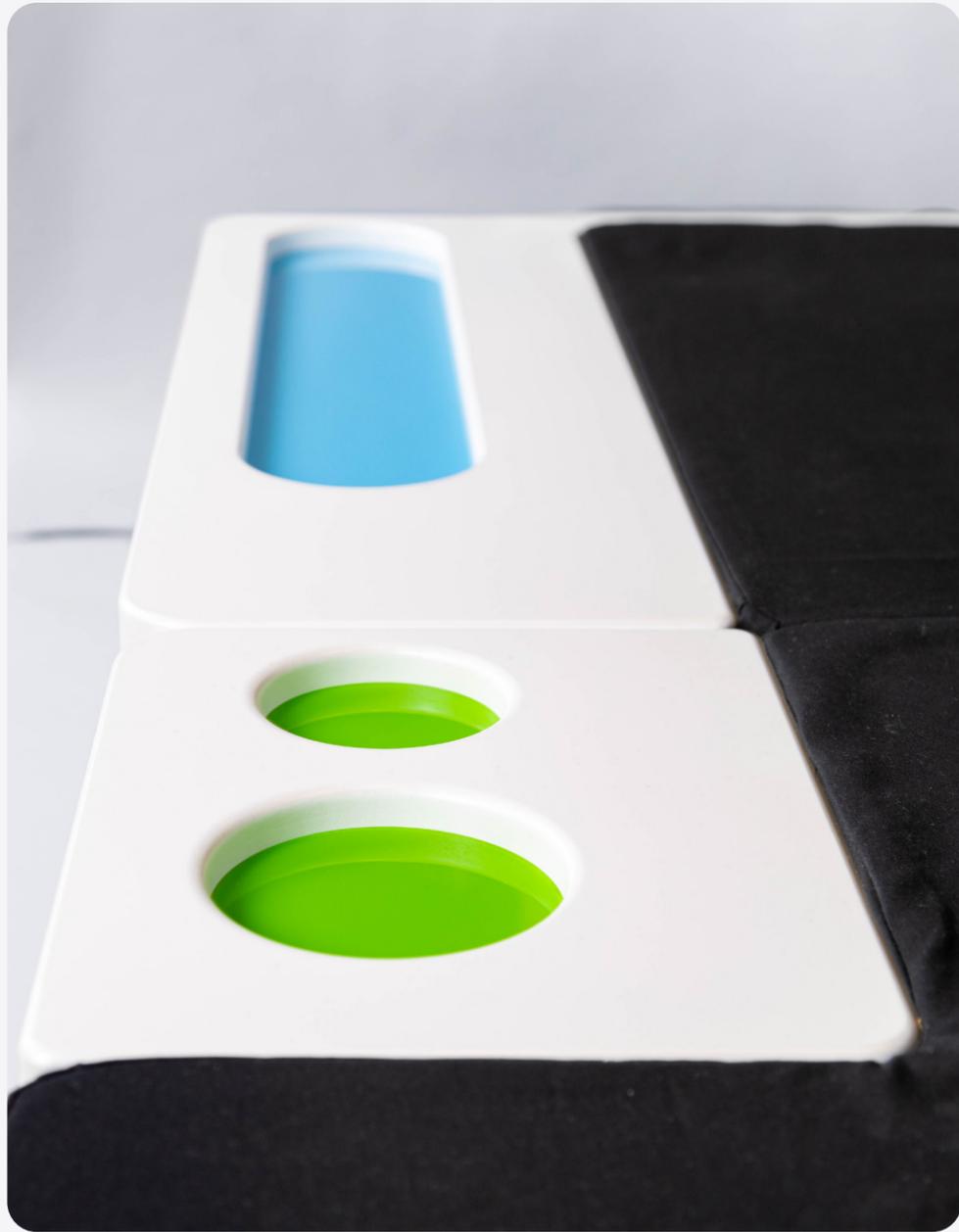


Final Physical Prototype: with Users



The layout of the cushion and drink surfaces encourage a sharing of space that would be uncommon among strangers.

Final Physical Prototype: Details



Each component has a different finish: a pearlescent white base is accompanied by gloss acrylic accent surfaces and matte black cushions.

Conclusion



After research, ideation, and creating a prototype of this piece, both successful aspects and areas of growth should be taken into account when moving forward.

Conclusion

From research to conceptualization, prototyping, and constant refinement of my piece, my project grew from the idea of approaching intimacy and technology through formal and conceptual means.

I believe that I achieved the goal of designing and creating a series of seats that are functional and visually interesting, while also provoking a reaction. The piece encourages the user to think about how the formally cold, technological language exists alongside the function of a "loveseat," and can have a different meaning for each user. Virtual Love's forms are reminiscent of technology, while not reading exclusively as a specific "device" or "model." The simple geometric forms were intentionally thought through and do not distract from the design intent. Each piece was designed in the context of the other pieces and as an individual unit, allowing the seats to both work together and apart. The color scheme nods to the playful colors of the iMac and iPod Nano, without being purely derivative. I carefully and thoughtfully machined each component to create a finished look, and this is evident in both visual and tactile ways; the smooth pieces and details invite interaction.

Components of the piece, however, should be considered for future refinement and improvement. Variations in form should be considered related to how the cushions interact with one another when the pieces are pushed together; a solution that would allow users to sit on either side of the pieces (when they are placed together) would allow for greater utility. In a production setting, a more durable substrate, such as wood, should be considered. More sustainable options for finishing, such as the use of powder coating, would also be valuable factors to examine. I would be interested in other iterations of this design with a different color scheme, solely because of the quick ability of black and white components to show imperfections.

In the context of the contract market in which Virtual Love could be sold, I think that the design would both fit well with other products while also adding an element of interest and discussion to the existing market. Without context, the sleek and modern forms would fit well in a tech workspace or similar setting; however, the intention behind the design could resonate with some users, encouraging contemplation. The piece, therefore, is adaptable and versatile, creating a varied experience among users based on the setting and their individual experience.



References

Visual language inspiration:

<https://www.apple.com/>

<https://www.theguardian.com/technology/gallery/2016/apr/01/40-years-of-apple-in-pictures>

Direction, support, and advice:

Professor Richard Prisco

Professor Cameron Van Dyke