Limb-It-Less

Made Your Way.

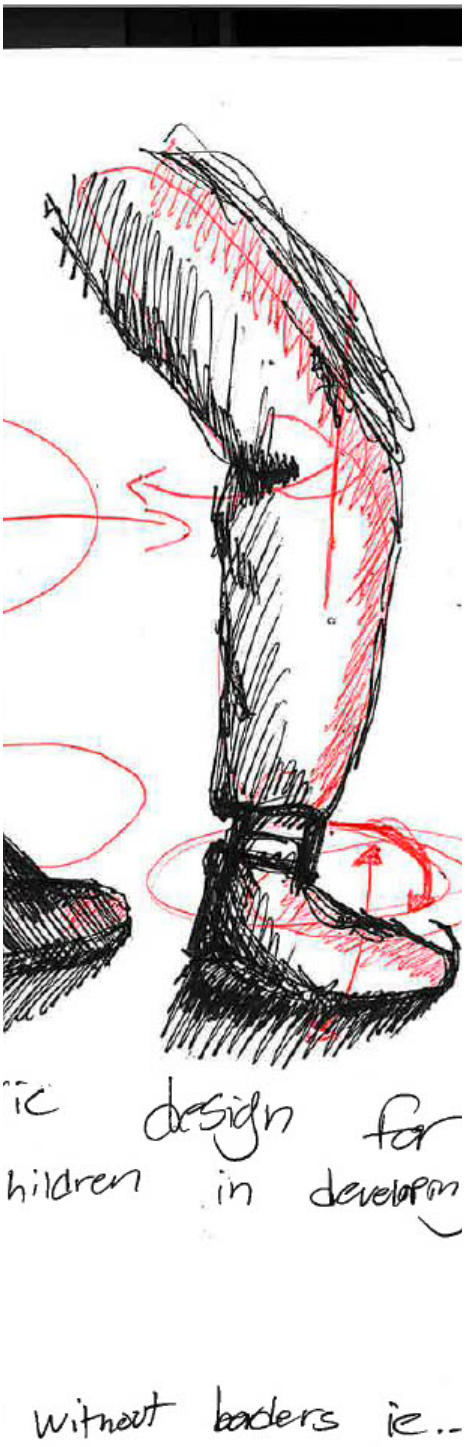
Document

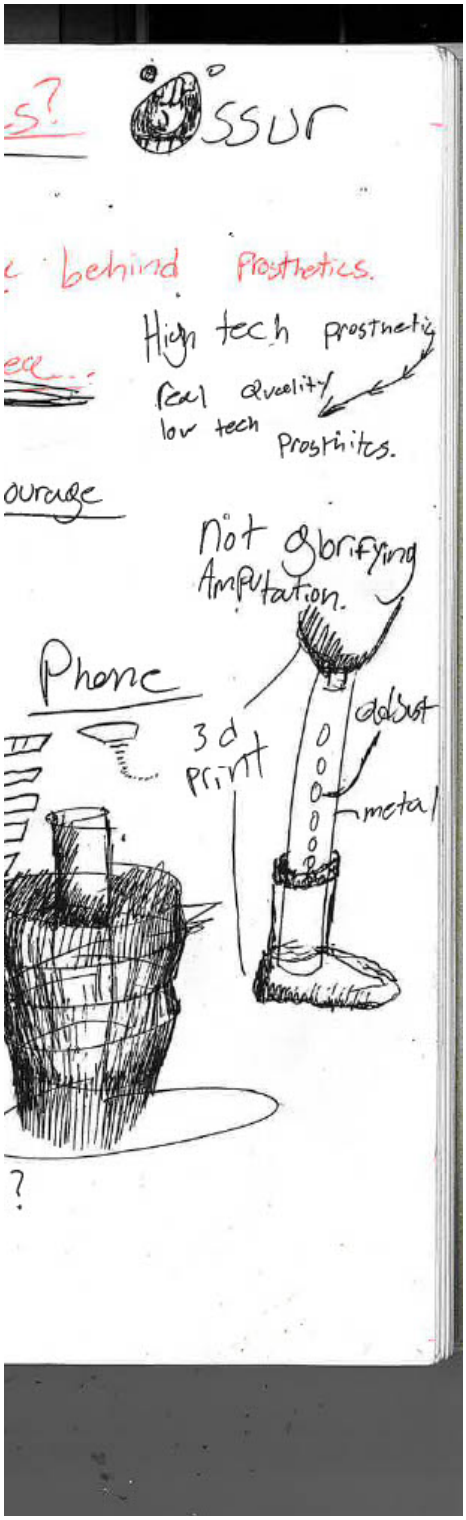
What?

A portable prosthetic fabrication system designed for use in low-resource or conflict-affected regions. Housed in a rugged, carry-on-sized case, it includes a compact 3D printer, color-matched biocompatible filaments, a measurement rig, and simplified modeling software. Pre-fabricated metal component ensure structural integrity, while interchangeable "jibbitz"-style accessories and markers encourage customization, allowing children to personalize their limbs. The kit reframes the prosthetic not as a clinical object, but as an expressive, adaptable tool—one that redefines the narrative by bringing users together through collaboration and playful "trade."

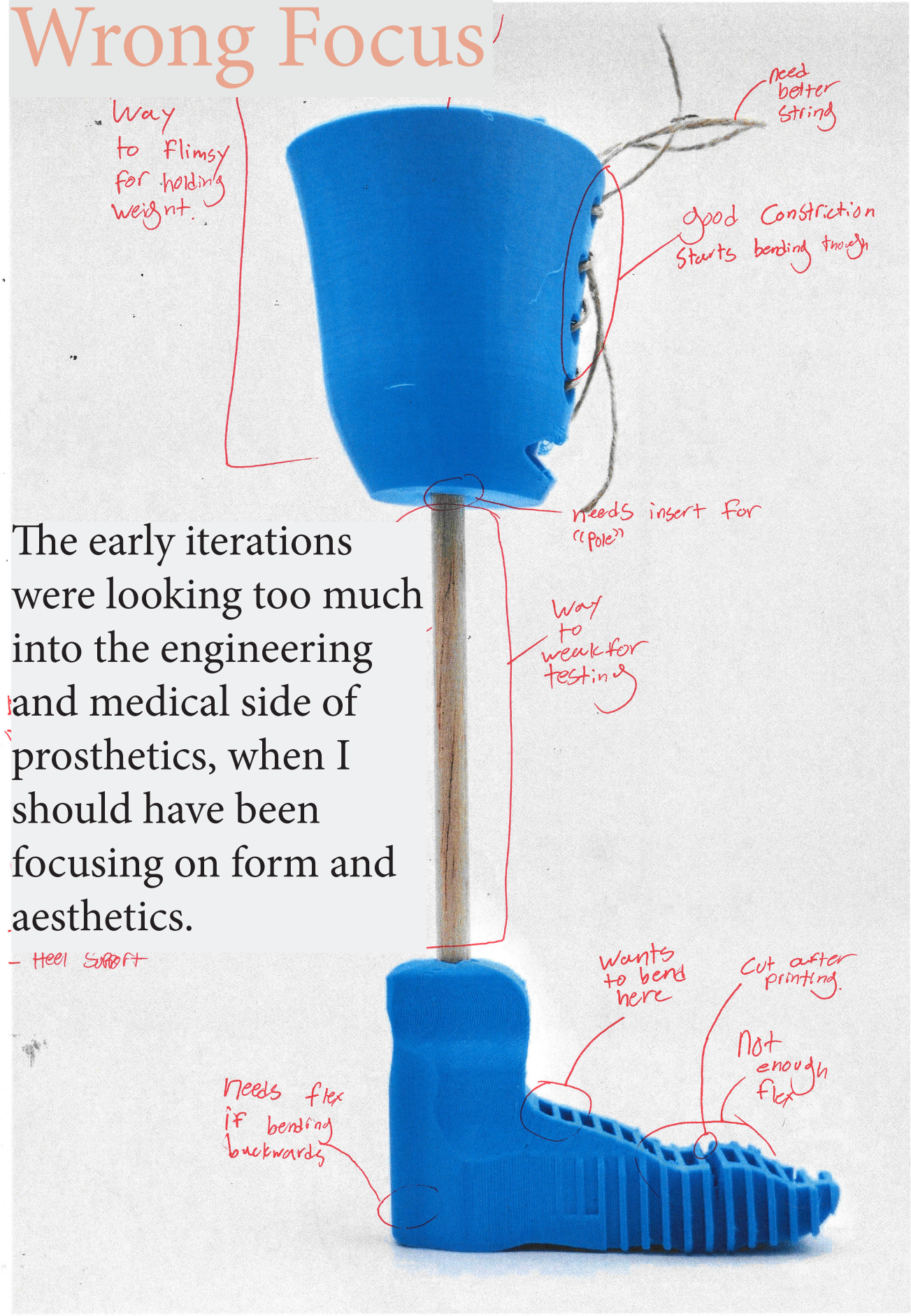
It explores what a prosthetic could look like if it were made for kids in unstable environments, using tools that fit in a suitcase. The focus is on a customizable, modular system that prioritizes speed, self-expression, and adaptability over long-term durability.

Early Sketches

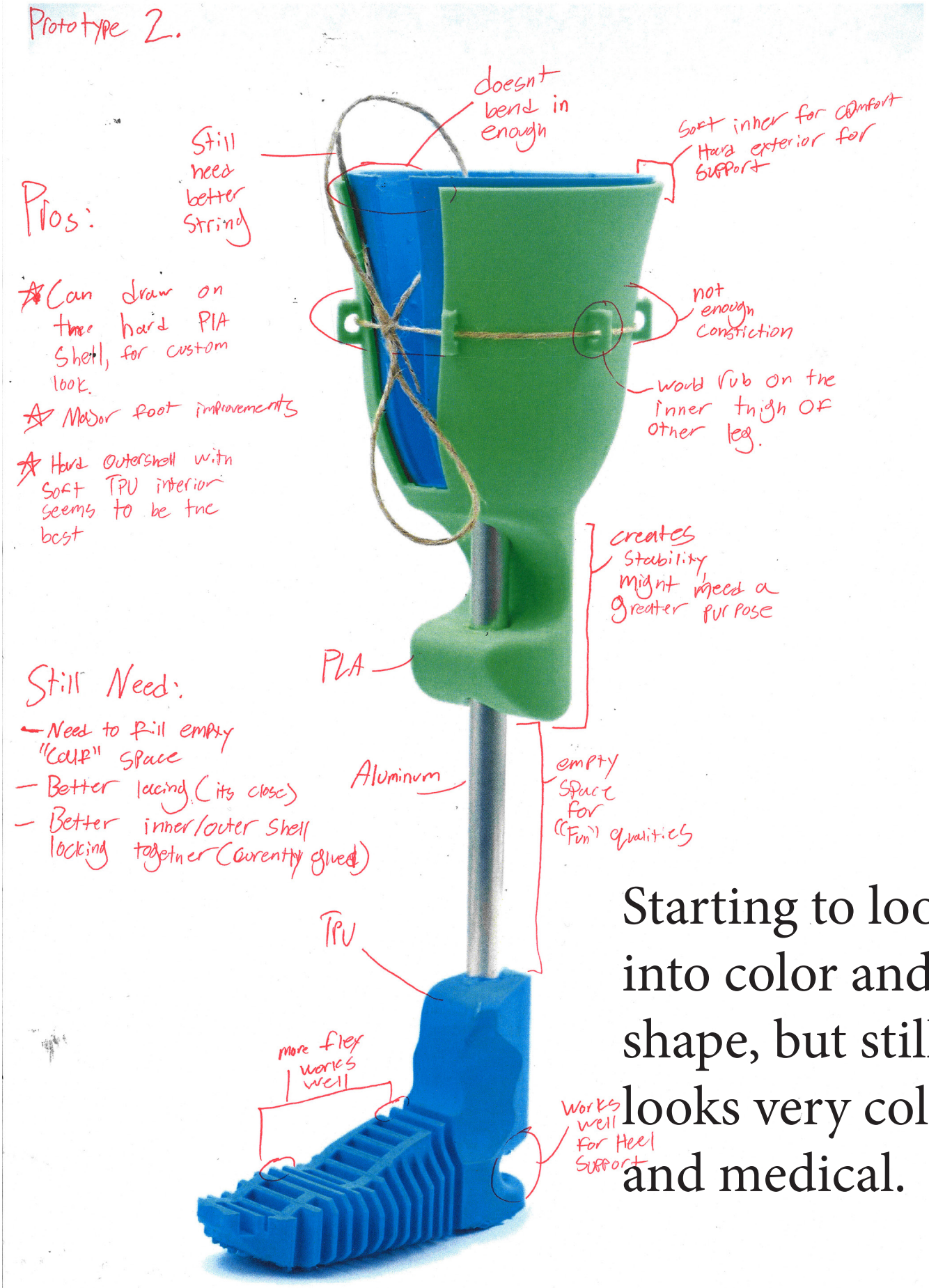




Wrong Focus



The early iterations were looking too much into the engineering and medical side of prosthetics, when I should have been focusing on form and aesthetics.



Starting to look into color and shape, but still looks very cold and medical.

A Study of Motion and Flex

Began to take walking motions into account, and figuring out where the flex and rigid points needed to be.
(The final design takes a lot of insperation from these feet design)

Customization and Aesthetic

I finally had the idea to let kids draw directly on the prosthetic, so they can truly make it their own. This was a major breakthrough that shifted the entire direction of my project — from designing a functional device to creating a platform for self-expression, allowing each child to show who they are through their prosthetic.

Getting Large

I finally built a large-scale prototype that I could walk and stand in. The colors and customization of the socket were exciting, but it still carried a medical look.

3D printed with PLA and a inner TPU linning

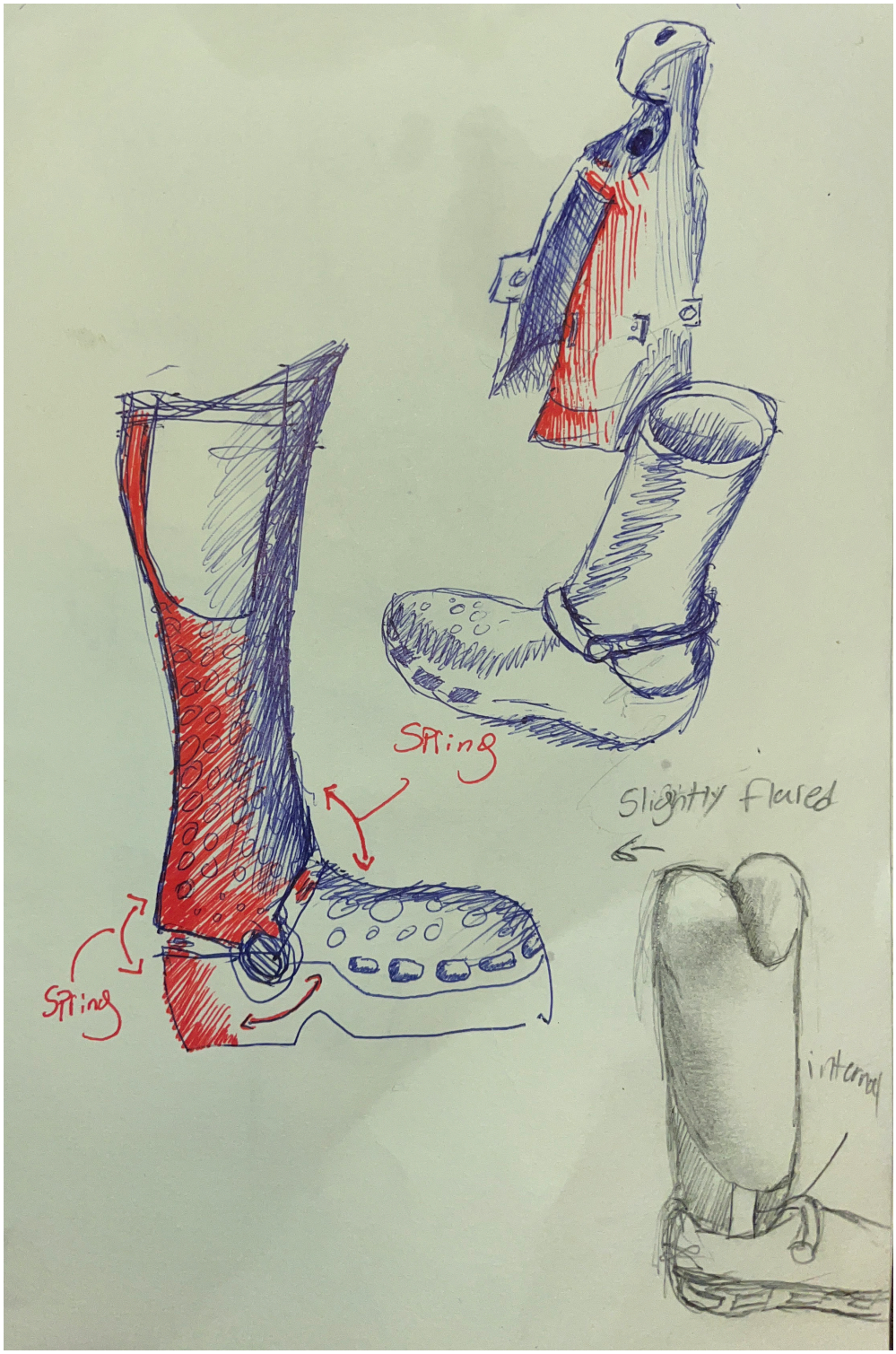
With an aluminum rod to adjust the height

Total leg cost = $9
Print Time = 24 Hours

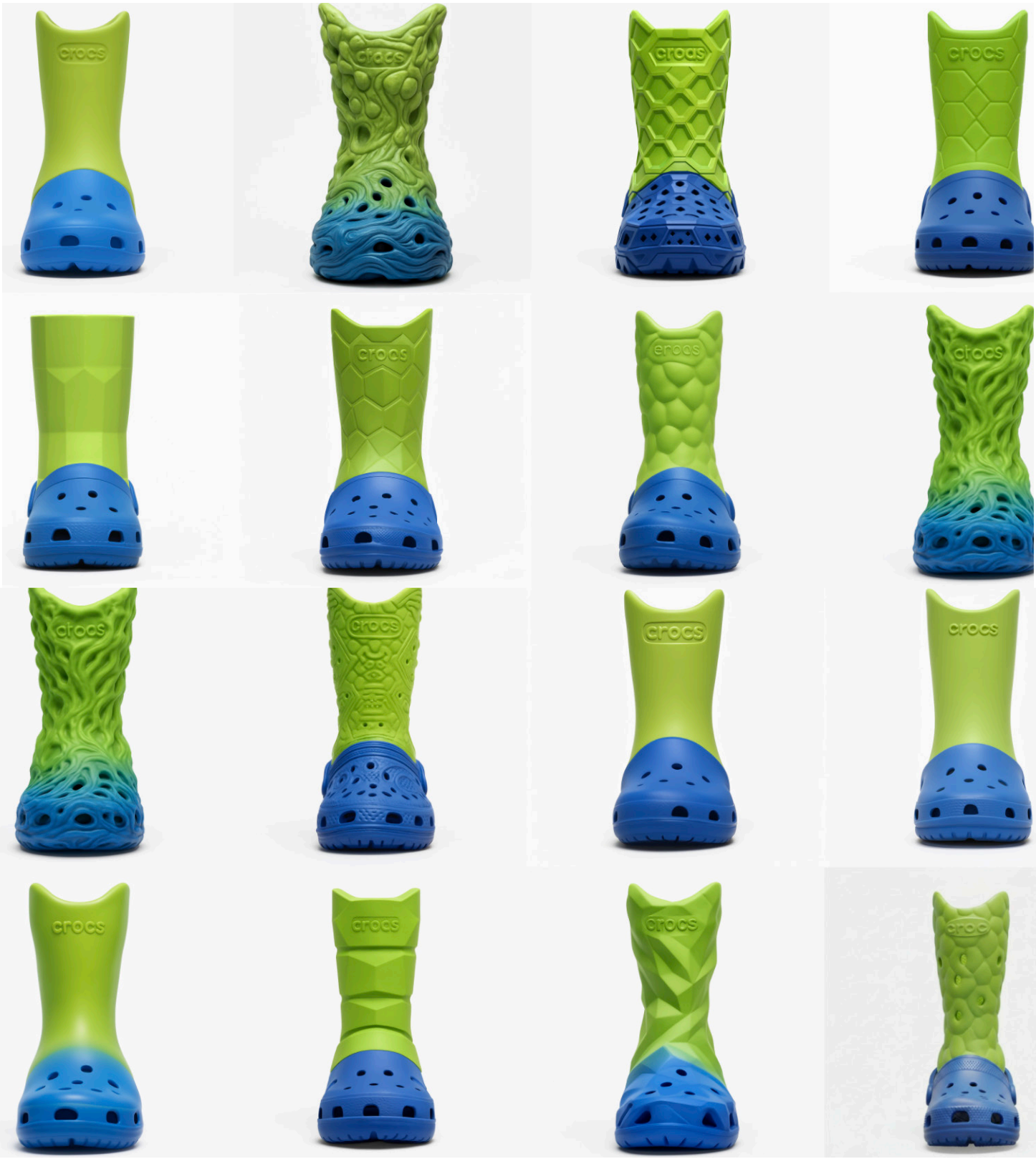
Taking a Step Back

After speaking with advisors and peers, the general consensus was that the playful aspect of the prosthetic was being overshadowed by its cold, medical aesthetic — largely due to the exposed metal rod running through the center. This feedback pushed me to rethink the project's core purpose: to create an affordable prosthetic that kids actually want to wear. Looking at brands like Crocs and the way they use a single, simple material to create a fun, tactile experience sparked a major pivot — toward designing a prosthetic that feels approachable, expres-

Getting Rid of the Rod



Using AI-assisted iterative design based on my sketches, I was able to produce a prosthetic that closely resembled a Croc — almost too much. However, the process allowed me to explore different combinations of colors and accessories.


crocs

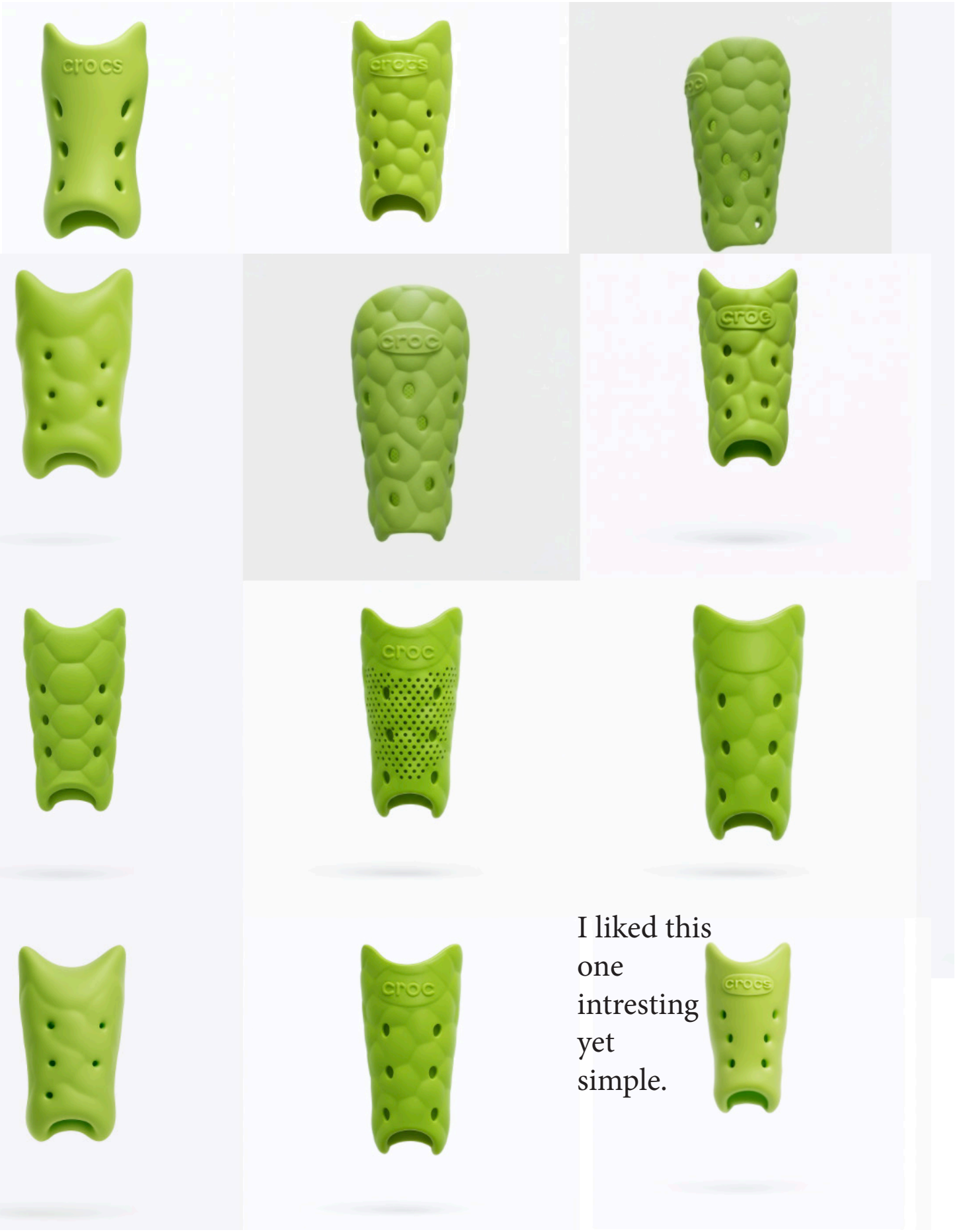
I settled on a design I liked, but the foot section still felt too much like a Croc, so I wanted to change that.

I was really enjoying the level of customization these new designs allowed.

Feet. That

To

Calves.


crocs
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I liked this one intresting yet simple.
crocs

Combine

A simple form that hides all the medical and mechanical components while maintaining an outer shell that's blank—like a canvas. With holes designed to accept charms, the customization possibilities are endless.

The foot features purposeful slits that flex where pressure is applied. Printed in TPU, it allows weight to be distributed evenly. The upper calf section could either be injection-molded and included as one of the kit's non-printable parts, or also produced in TPU for a fully printable version.


REBEL
PIZZA POWER
YEAH!


COOL
AWESOME


COOL LBS
BLAST OFF
YEAH!
COOLLEG


COOL
VIBES
ART


DOPE


LUCKY


crocs
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Developed through iterative AI design based on my sketches — using AI as a tool to explore and refine,