

Kenneth Arnold

DESIGN PORTFOLIO 2019

The Waterside Gobbler

2019

Situated along urban canals in places where floating plastic naturally collects, the Waterside Gobbler aims to propel people into action by making it fun to remove plastic from the water.

The goal of this project is to frame the challenge in an approachable way to activate people around the issue of plastic pollution and reduce what travels downstream into rivers, oceans, and the wider ecosystem.

As seen in [the Evening Standard](#)

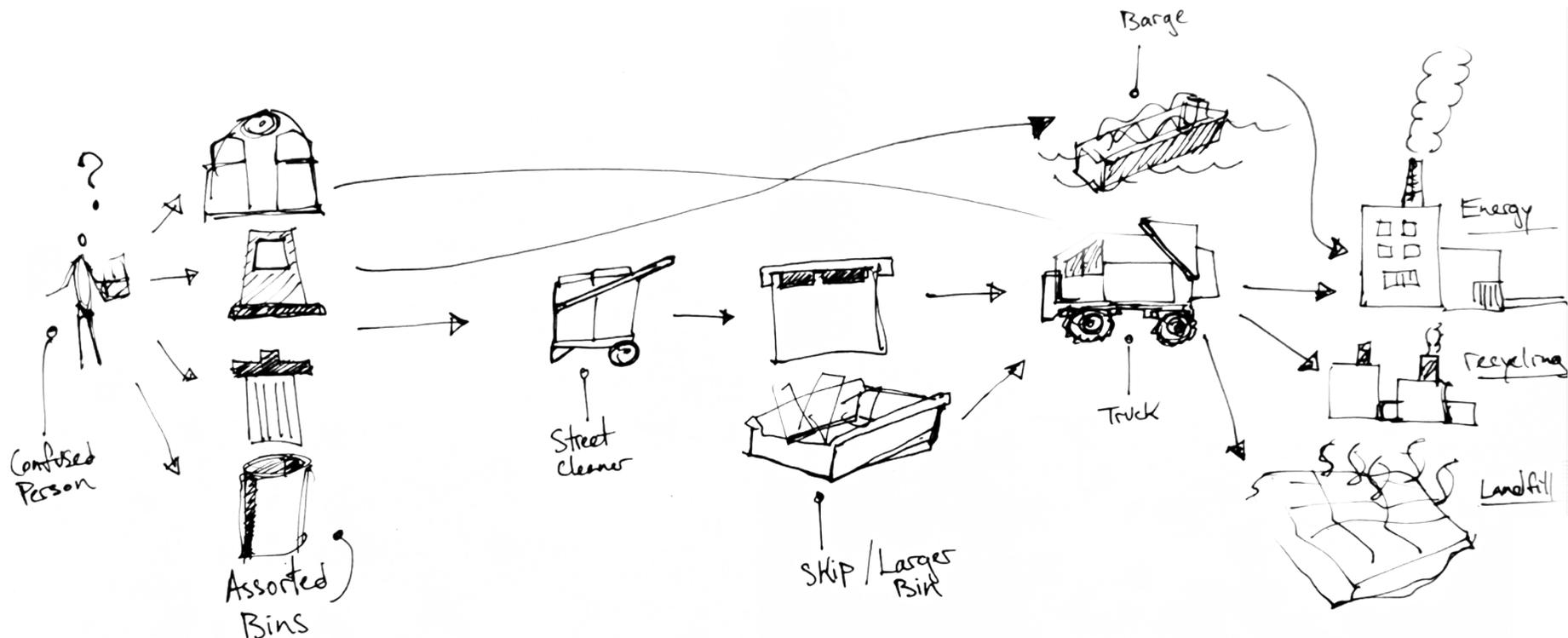
Dutch Design Week 2019.
[DDW Trend: The Invisible Designer](#)



Research: Where does it go?

The Discarded

For many people, when it comes to throwing away items, out-of-sight is out-of-mind. I wanted to understand where our “waste” goes and how it connects to the global ecosystem of waste management. I began to create a map by conducting desk research, visiting sites, speaking with various stakeholders and observing people’s behaviour to identify opportunities for potential intervention points.



Research: User Observations

Throughout this project I spent time observing humans in their urban habitat and developed a minor obsession with garbage bins and how we use them (or don't). While many people throw their garbage away in whatever bin is available, others behave a bit differently.

Three types of behaviour caught my eye

Compensatory Bin-haviour

Similar to the phenomenon of “desire paths” found in nature, Informal collection points could signal to sanitation companies the ideal locations for new bins.

Heroes Among Us

Some individuals have been seen going out of their way to try and help by taking action and fishing out plastic from the environment. How might this behaviour be encouraged?

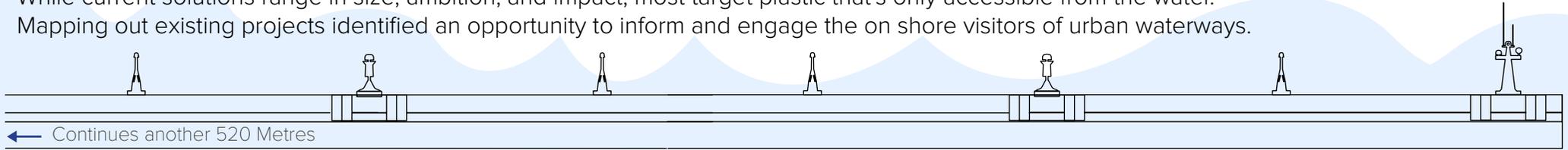
Labeled & Confused

When people throw away their items, some stop and try to identify the correct bin. They can be seen glancing between their garbage and the bin. Unsure of which is correct, the person gives up, tosses their item, and moves on.



Research: Landscape of Interventions

While current solutions range in size, ambition, and impact, most target plastic that's only accessible from the water. Mapping out existing projects identified an opportunity to inform and engage the on shore visitors of urban waterways.



EXEMPLAR PROJECTS

Ocean CleanUp Project - System 001

Floating barrier and filter to collect surface plastic pollution

Location: The Great Pacific Garbage Patch

Size: 2000FT (600M)

Mr. Trashwheel

Solar-powered water wheel and conveyor belt to collect floating pollution

Location: The Baltimore Harbour

Size: 50FT (15M)

SeaBin Project

An installable filter for marinas that removes a range of pollutants from the water

Location: Worldwide

Size: 1.6FT (0.5M)

UrbanRivers - TrashBot

Remote controlled floating robot that lets people clean the Chicago River via the Internet.

Location: Chicago River

Size: 3FT (1M)

Plastic Whale

A plastic fishing organization that organizes group trips to clean canals, collect plastic and recycle it.

Location: Canals in Amsterdam

Size: 18FT (5.5M)

Moo Canoes

Plastic fishing organization that offers free kayaking in exchange for volunteering to clean canals

Location: Canals in London

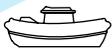
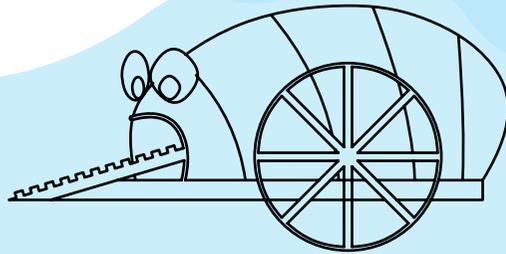
Size: 12FT (3.6M)

Ghost Fishing

A non-profit that supports a global network of volunteer divers who remove discarded fishing gear from oceans

Location: Worldwide

Size: Adult

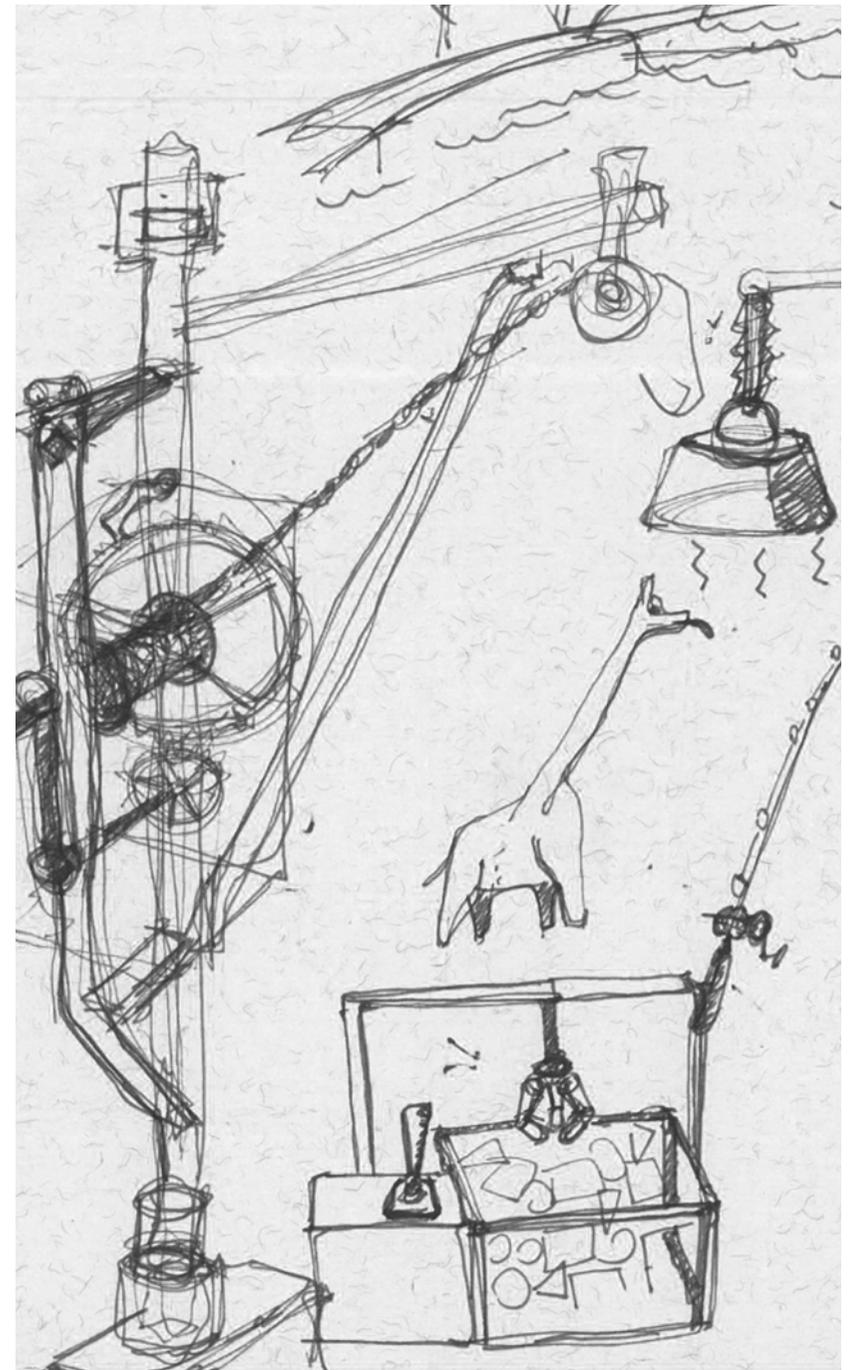
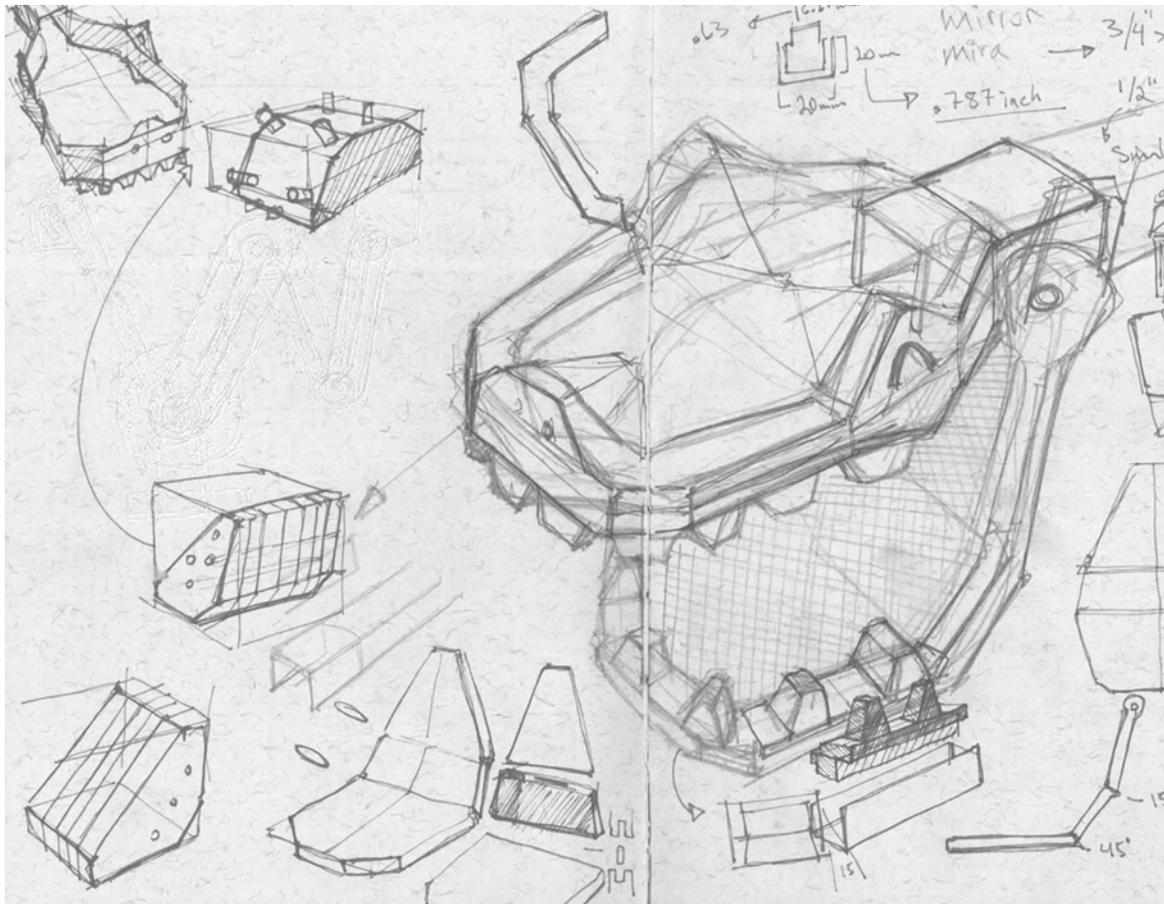
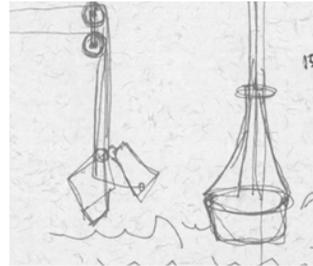


Sketching: A Plastic Fishing Game

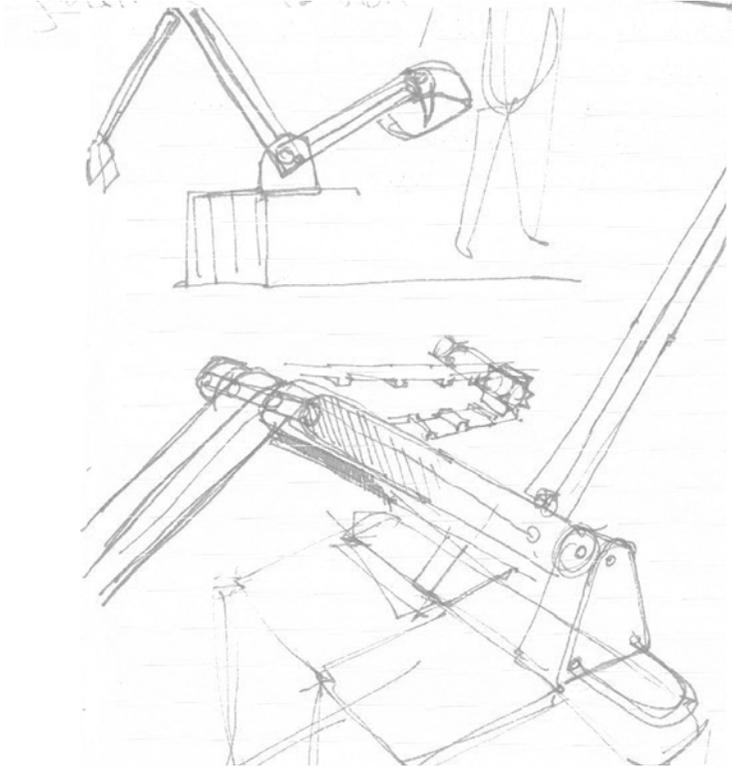
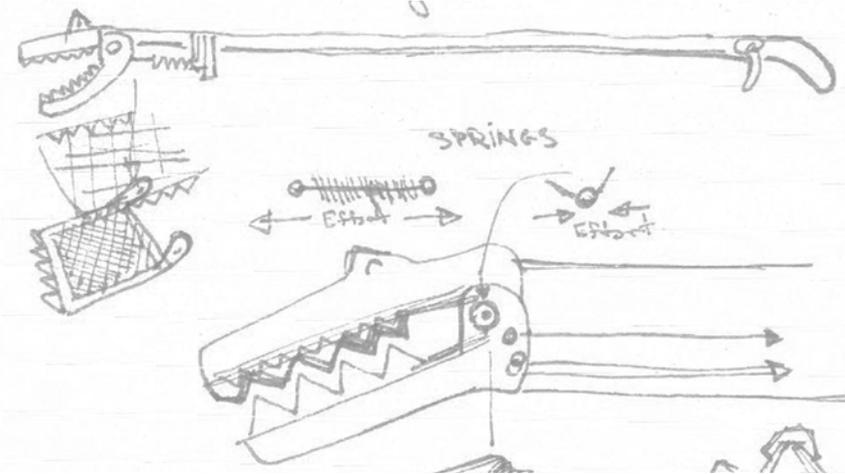
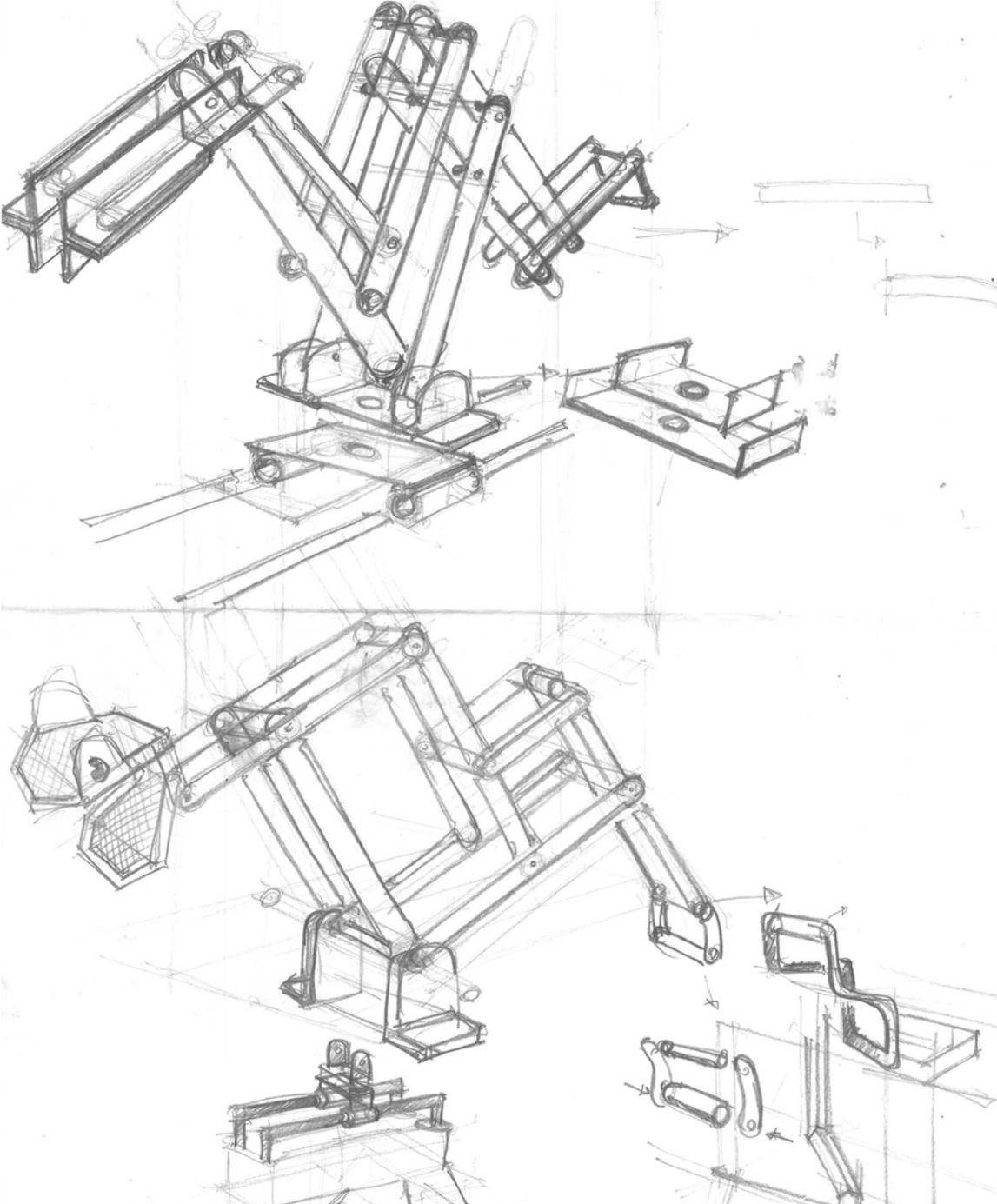
Why should bins be boring?

Initial prototyping informed the design and mechanical development for an extendable litter picker that could attach to canal side bins.

Inspired by canal barge cranes and gamification, I explored the idea of a litter picking game to engage people in taking care of the environment.



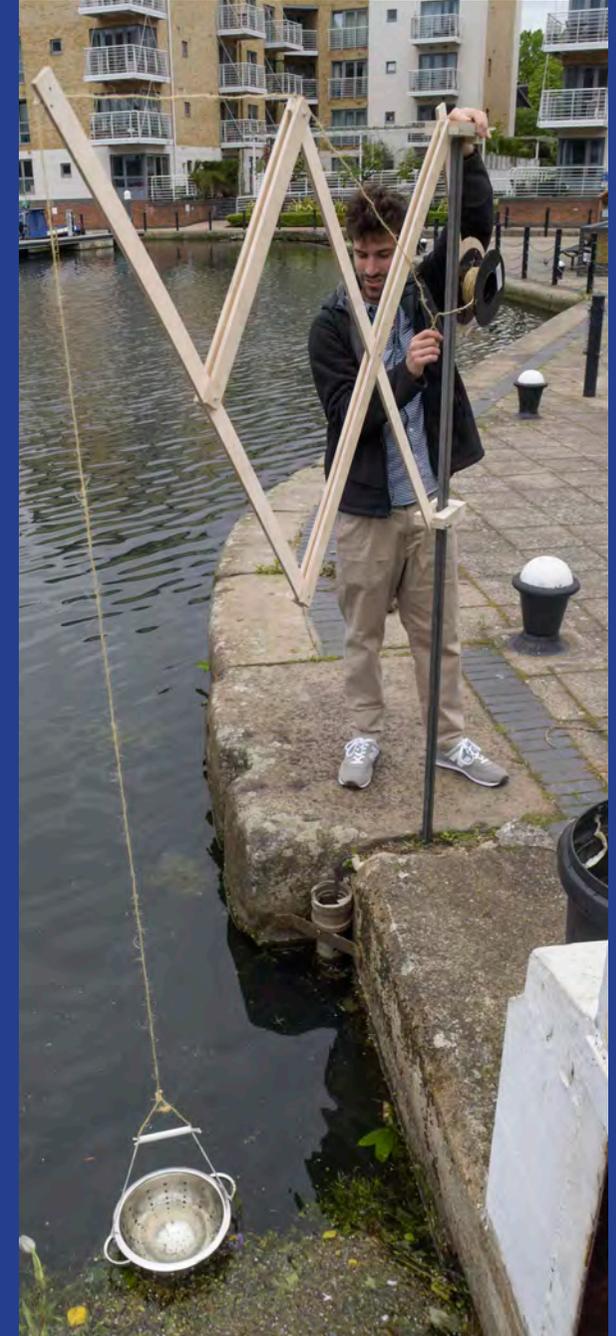
Sketching: Mechanical Development



Prototyping: Design Through Experimentation

To establish a benchmark for improvement, the project began by looking at passive filtering methods. However as the design evolved, it became clear that the “out-of-sight” mentality was reinforced from this approach.

With the aim of empowering pedestrians to take action and connect people to the problem of plastic in the environment, the concept evolved through iteration to incorporate gamification as an incentive for participation.



Prototyping: Iteration & Testing

From cardboard mock-ups and hacking IKEA carts to metal tubes, saddle washers, bolts, and springs, as this prototype evolved, so too did the mechanism and materials.

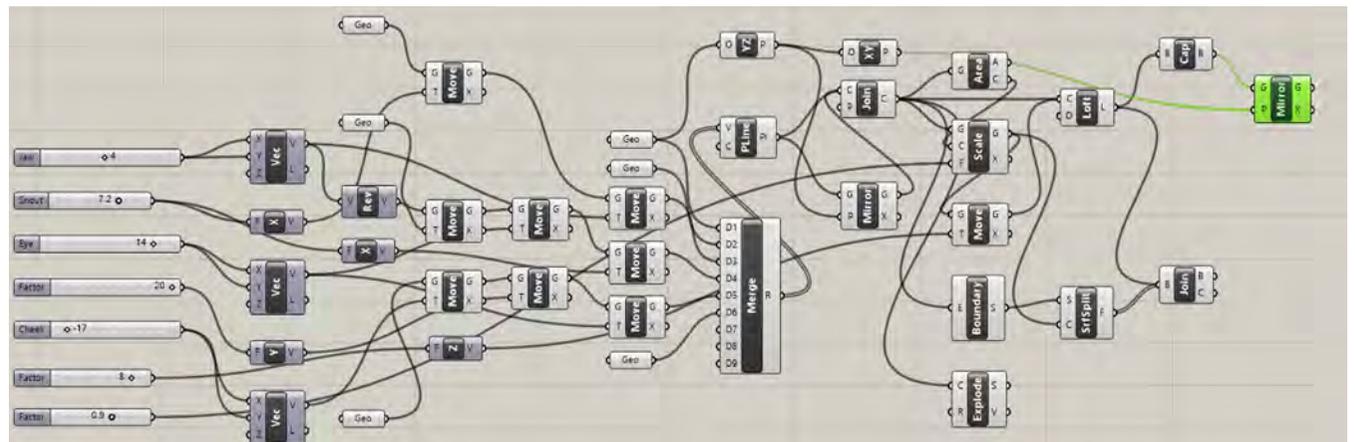
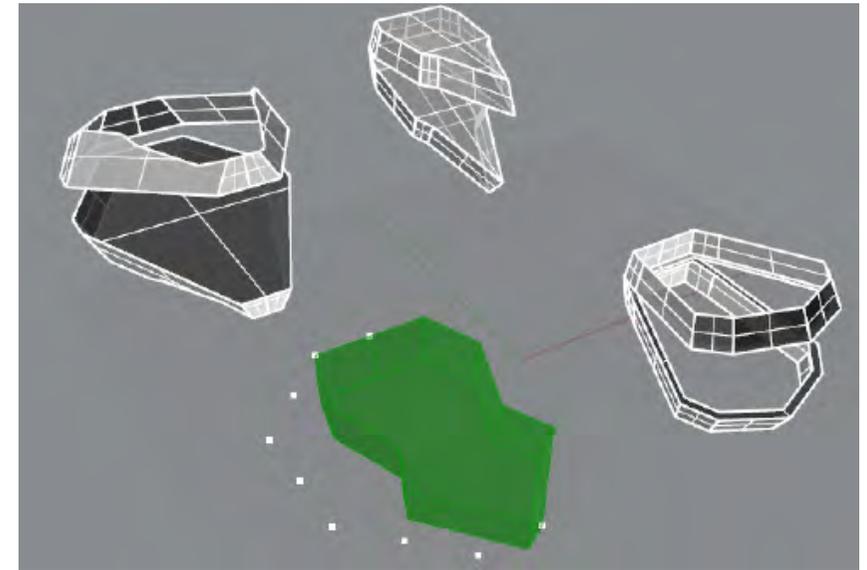
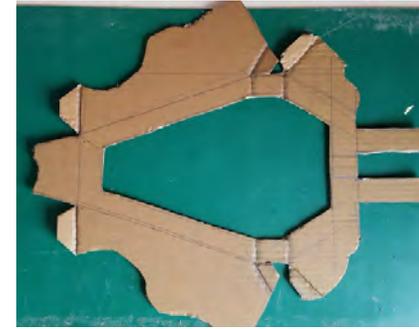
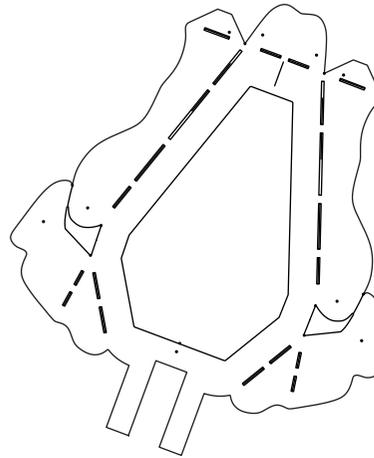
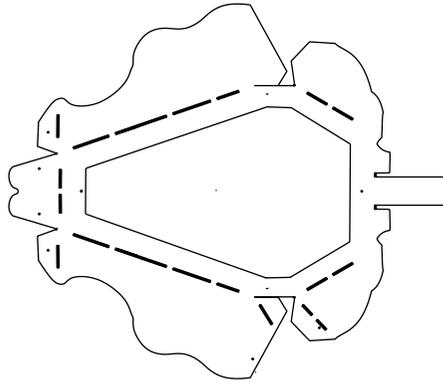
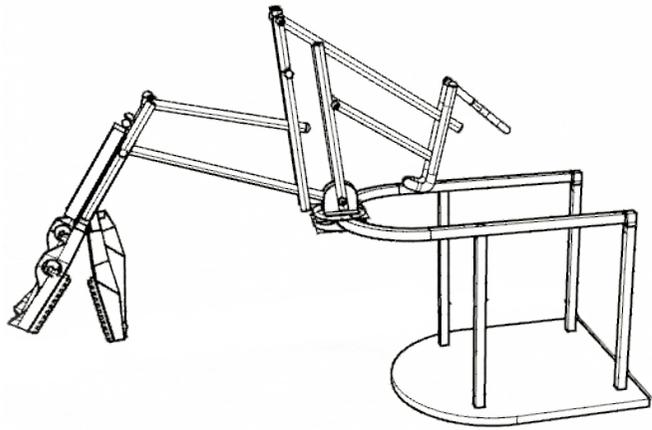


Concept Development: Digital Customization

Inspired by different species that live near water, an idea emerged to enable Waterside Gobblers to adapt to their local community and environment.

To facilitate this customization a parametric 3D model was created so that Gobbler heads could be easily modified to resemble the proportions of fish, reptiles, amphibians or birds.

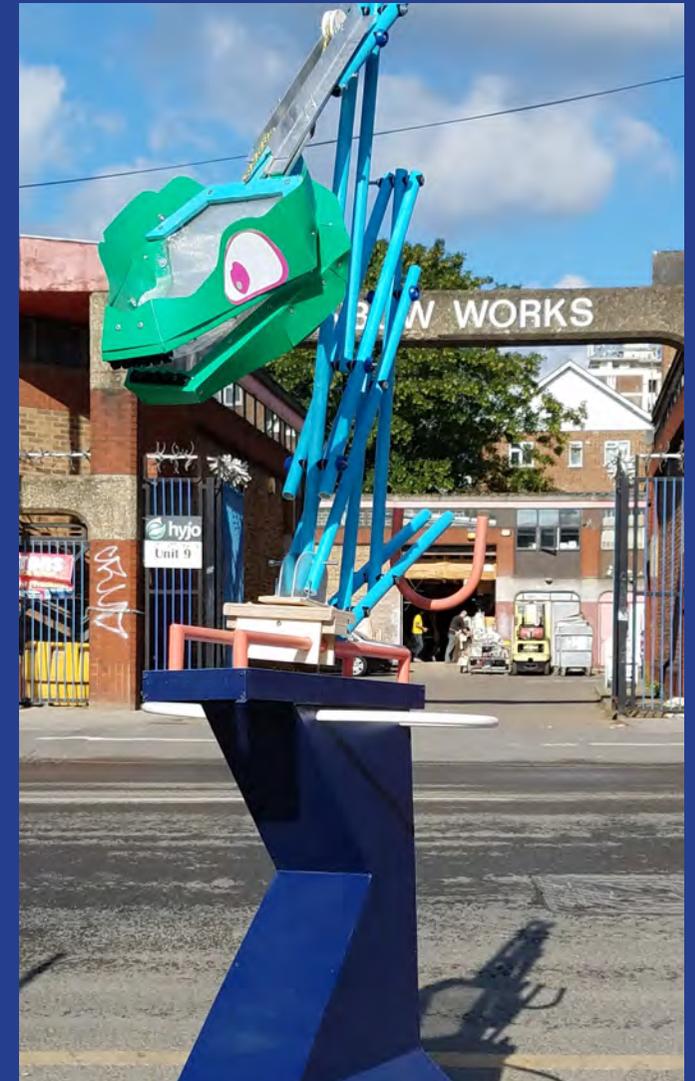
The output of the model could then be turned into a file suitable for digital fabrication.





Friendly Neighborhood Litter Picker

While developing the mechanical design, it was also necessary to create a character that looked friendly. To trigger a positive response, the design of the Waterside Gobbler's head was inspired by the facial proportions of the "baby schema".





Choosing the right materials

Like public furniture or playground equipment, it was necessary to develop a model in steel and aluminium that would be safe while withstanding inclement weather, water damage, and potential abuse that might occur during its lifetime.



Presentation: Exhibitions & Design Reflections

Whether testing in the wild or demonstrating at exhibitions, many people across all ages are attracted to the Waterside Gobbler. While certainly the design played a role in attracting attention, this project also underscored how easily it can be to latch on to simplistic ideas.



It is my hope that one day we won't need to fish plastic from the environment, but addressing this global problem will require solutions at all levels of society, from legislation and infrastructure to better material choices and producer responsibility. However for the world of today, the Gobbler is ultimately a tool to extend our reach and invite participation to enable more people to get involved in taking care of our waterways.



CanU

2011

How might a toy grow with a child's cognitive abilities ?

As childrens' brains develop they gradually understand their world. This toy was created by combining developmental psychology research with a generative design process.

All concepts were designed based on the stage of development. Specific phases such as the pre-operational stage (where a child learns it can pull apart and put shapes back together) were of particular emphasis.

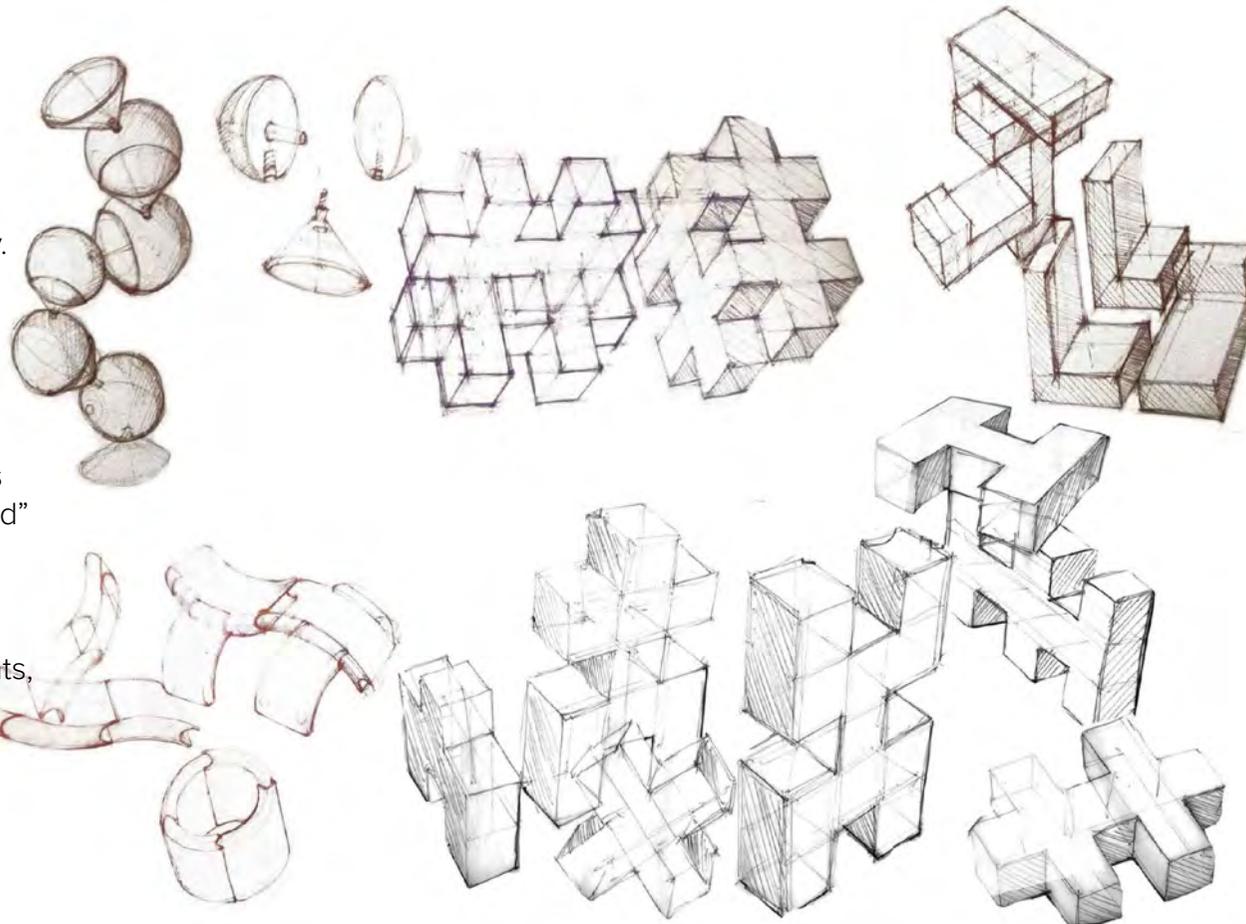


Research & Ideation: Design & Psychology

Combining an ideation process created by Victor Papanek and the research of Jean Piaget led to the generation of ideas that combined learning and play.

The most potent idea however was a concept for a single toy that could incorporate different modes of play which be “discovered” by the child as their brain developed.

Due to production constraints, the concept was then simplified to ensure uniformity and preserve the design intent.

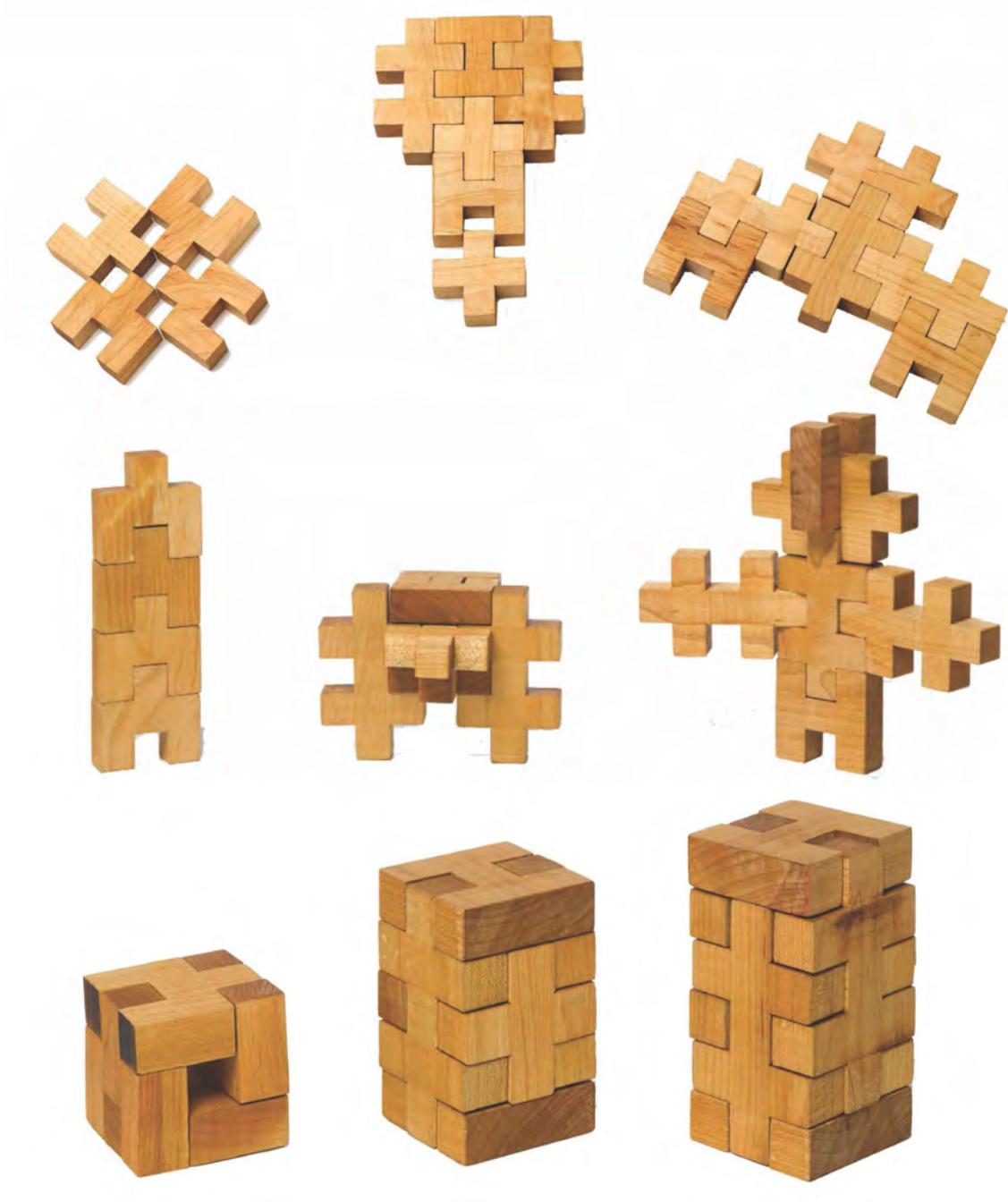


Victor Papanek



Jean Piaget





User Testing: Learning Through Play

Once prototypes were created, I began testing the concept at schools and daycare centers.

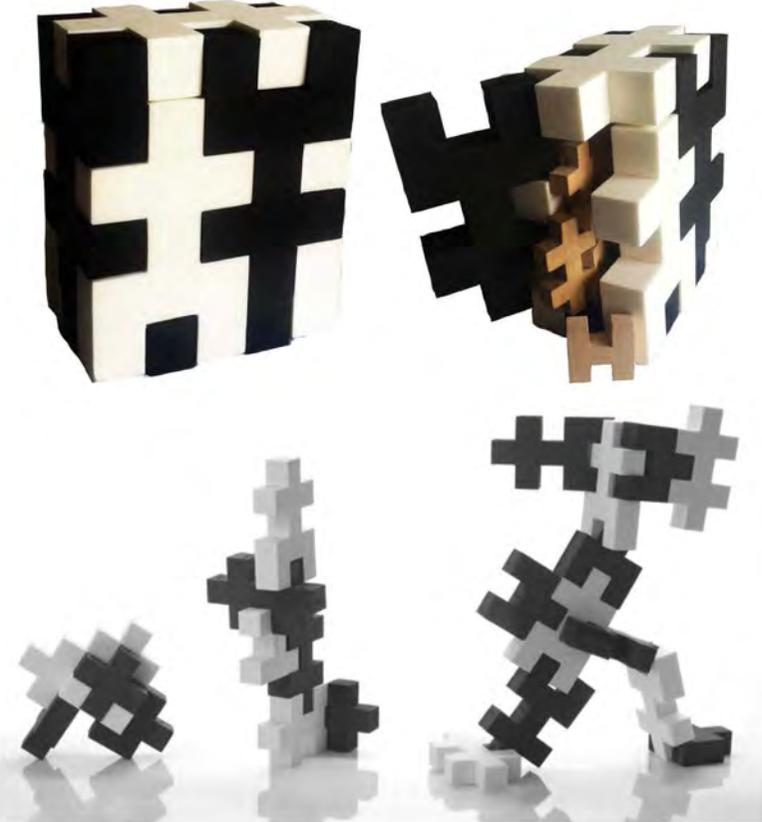
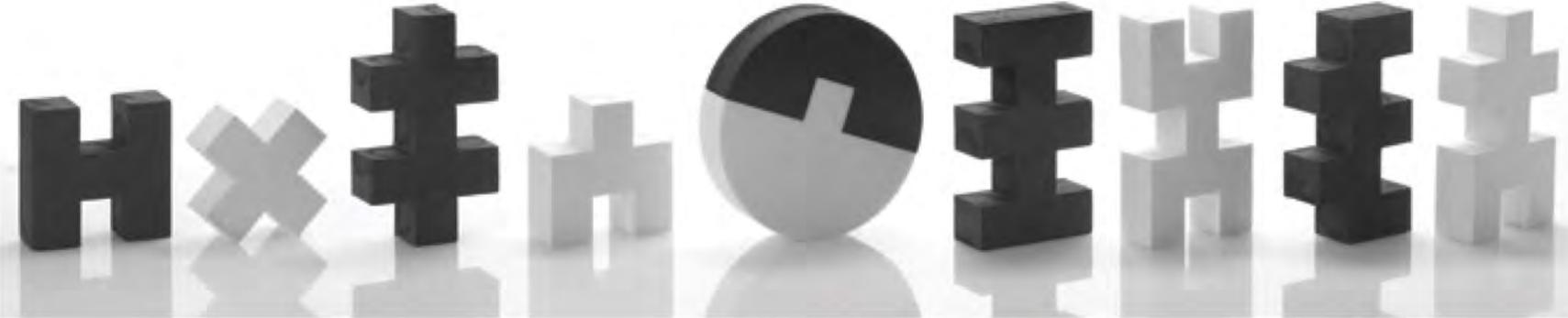
From overhearing children exclaim “let’s connect all of them” or “the X is where the treasure is!” early tests showed that this product was highly engaging and could help children learn about balance, negative space, and collaboration

In addition it also caught the attention of educators who purchased sets for their classroom.



Product Development: Material and Process

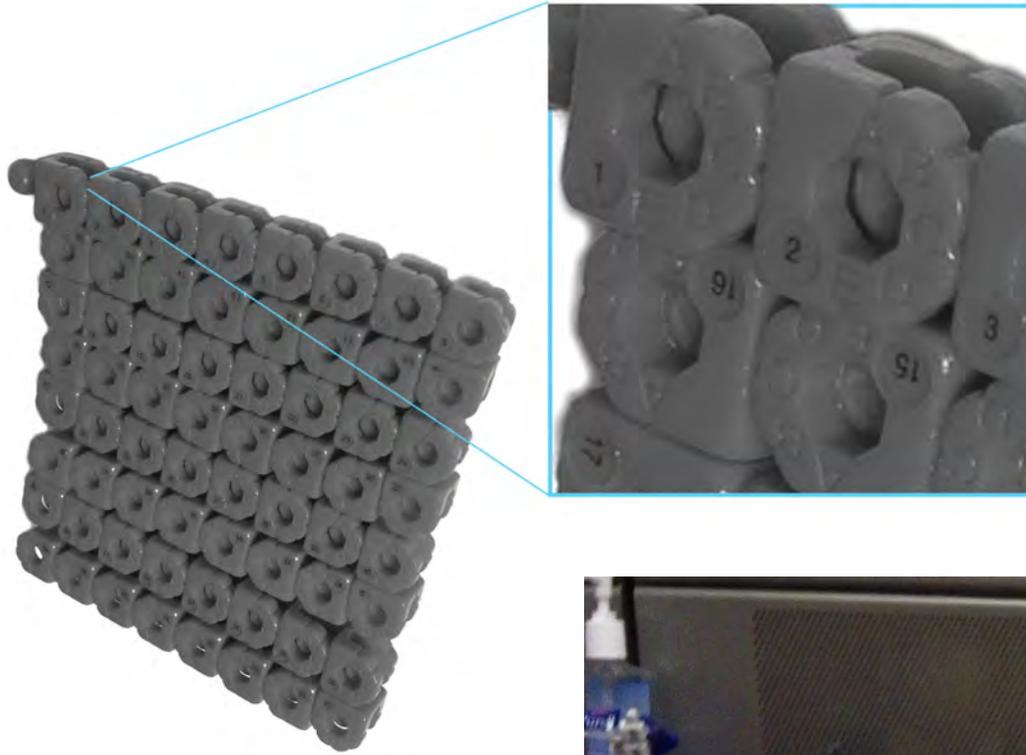
To explore how the concept could scale and evolve, foam was investigated for its softness and ability to float while a CNC process was used to produce shapes in way that reduced waste.







Product Development: Turning an Invention into Product Line



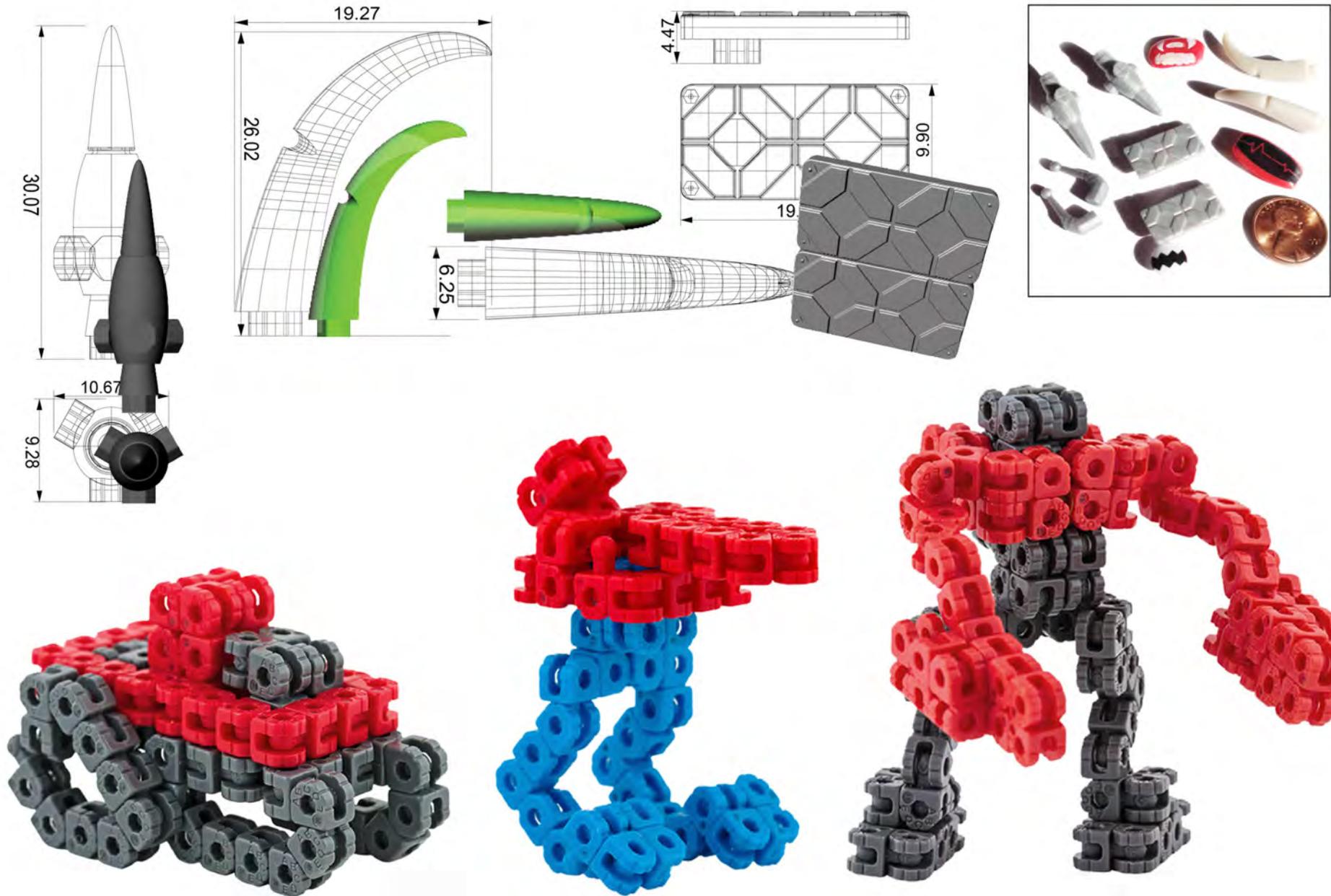
Codee was invented as a code generating and decoding toy consisting of a strand of 64 linked blocks with ball and socket joints. As each piece is clicked into a position, a code is generated with a number, a symbol, and a letter. For example a code would consist of 1>C, 2+B, 3-A, etc. By twisting and turning the blocks according to the code, a unique creation is made.

My role was to make creations that would become codes for kids to build. I accomplished this by creating a world of characters. As a result my desk at work was filled with experiments.

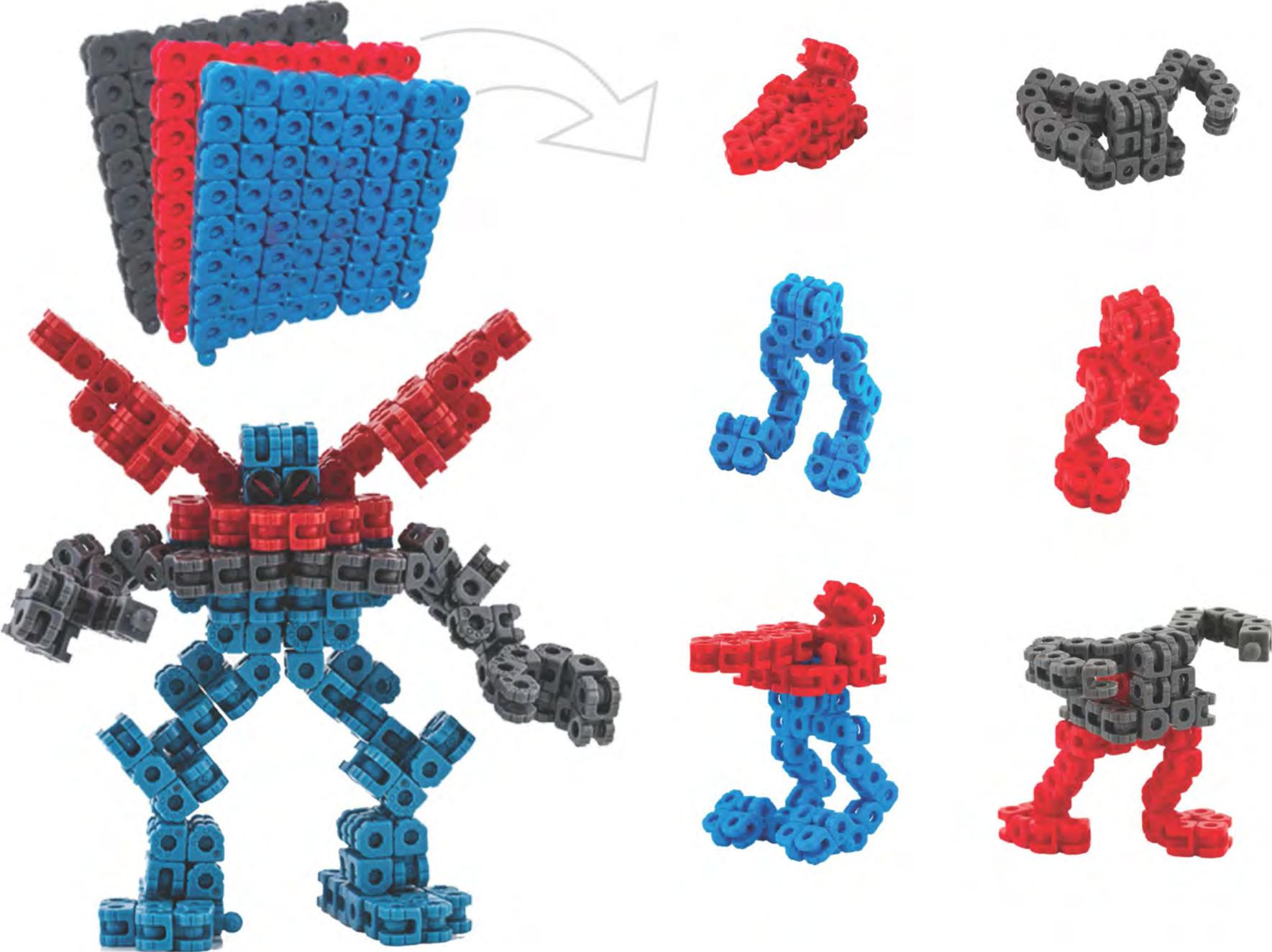


Product Development: Adding Value to the Play Experience

To make an easier out-of-the-box experience I eventually developed a modular system of building. Instead of creating one character from a single strand, I segmented characters into a core unit along with features such as arms, wings, blasters, wheels, masks, to enable kids to mix and match possibilities. My role also included the development of injection molded accessories to add additional details to the characters.



Product Development: Buildable Characters





Duo Racing

2018

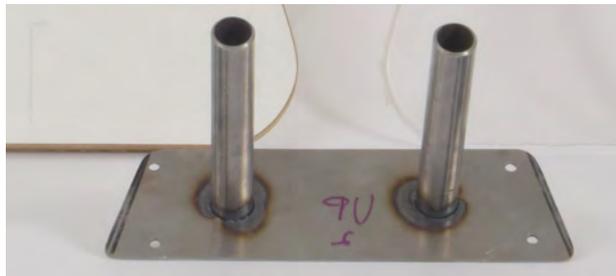
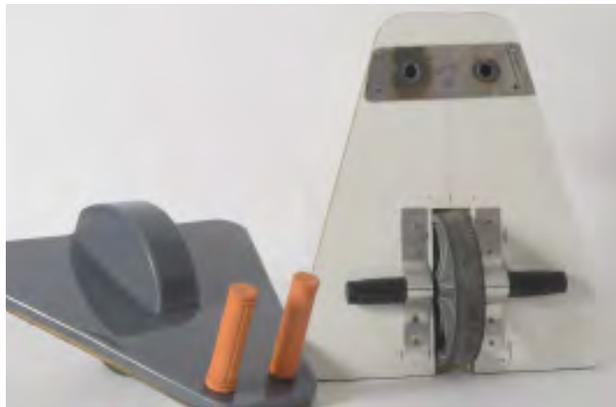
Duo is a modern twist on the traditional children's game of wheel barrow racing that is found in cultures around the world.

Feel the speed in your face and go as quick as your partner can run. One person drives by leaning or tilting and the other acts as an engine to provide the momentum.

Duo can be played with a pair of friends or with teams of pairs and variations include distance and timed challenges.



Prototyping



Duo utilized an iterative approach with each version becoming more comfortable. Gradually the design evolved from a foam covered piece of plywood with a greased ab roller to utilizing discarded bicycle tires and created an open source CNC board with an adjustable height to accommodate more users.

Play Testing



Thank you!

I hope you enjoyed learning about my work. To view my complete portfolio project videos, and learn about my process, please visit my website at:

www.kennyarnold.com