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“A Heart Felt Toy System”: How Can Materials, Structured, and Unstructured Play, Impact Toy Innovation, and Design

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“A Heart Felt Toy System”: How Can Materials, Structured, and Unstructured Play, Impact Toy Innovation, and Design

By

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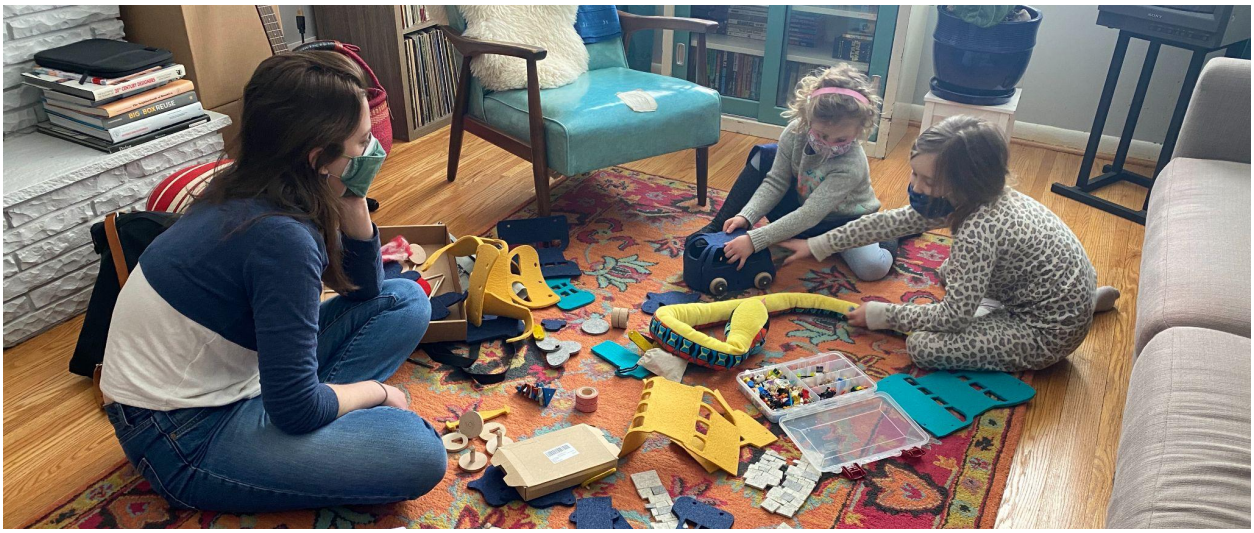
Abstract:

The pervasiveness of single use plastic for toy production has created the cultural consciousness that most things are disposable. The moment you've deposited something in the trash you are no longer responsible for it and for some, it no longer exists. A material's lifespan, origin, and sensory experience can be positive factors in its inclusion for a design. I chose to study organic materials and how they can be used for toys and aspects of play. As a case study, I created a felt vehicle toy system that rethinks the way we use organic materials for toy applications. I then tested these kits at a few stages in their process, with children and adults, to gauge the interest and the different play styles possible with them. The outcome was that one hundred percent Merino wool felt, the main material of my product, normally used as a soft, thin, and flexible material, can be a unique building material to create the form of a vehicle. The utilization of fibers in a relatively rigid form opens new options for materials uses. There is room for innovation in the use of organic soft materials, like felt, but also exploration of the emotional relationships with a product or toy itself based on a comforting sensory experience, and the factors that keep a toy out of the landfill.



Keywords: Toy Design, Product Life Cycle, Sustainability, Play Value, Open-ended play for children

Introduction:

Most plastic toys don't get recycled and they either exist for hundreds of years in a landfill, get incinerated, or gather dust in an attic after a child is done with them. This idea of a short consumer life for single use plastic is consistent with consumer behavior with toys. After the useful life for anything from a fast-food meal toy to a barbie dream house, they are thrown away (Yaffe-Bellany, 2019). These plastic toys lack play value, or repeatable play ability, and reinforces this idea that the toy is no longer useful or fun and should be thrown away or given away. The original user is no longer responsible for it and has little emotional attachment to it. When we rethink the way materials are used, we can draw a connection between a toy's useful lifespan, the material they are made from, and the structure of play.

Materials and the Toy Industry:

For the past one hundred years plastic toys seemed to be an unavoidable part of everyone's childhood. Prior to the 1900s, wood, metals, and found objects were used for play (Kinchin, 2012). Consumerism and the success of the toy industry go hand in hand. It's human nature to want something new, and innovative. With trendy toys it may be a new fad toy that has proliferated the internet, or a new toy based on a pedagogical technique that claims to make your baby smarter (Lightfood, 2013). These mentalities keep toy purchases high and plastic in the landfill higher. The need for child entertainment during stay-at-

home orders caused an influx in toy purchases in 2020 (“Traditional", 2020). Ninety percent of toys produced today are plastic and the majority of those can’t be recycled due to their mixed material content. Eighty percent of all toys are disposed of and eventually end up in a landfill or floating in the ocean (Foundation, 2021).

In reaction to these realities, there is an effort to make toys more environmentally sustainable. Recycled plastics, bioplastics, and compostable packaging are the main proposed industry solutions. Hasbro, Mattel, and Lego have all started toy take back programs where you can ship used barbie dolls etc. back to them and they will be sorted and remade into new barbies and other products (Mattel, 2021 and Foundation, 2021). The company Lego has been researching for many years now to make their famous modular bricks from bioplastic or plant-based plastics. So far, they have produced what amounts to two percent of the entire Lego assortment from this new plastic (Foundation, 2021). For other toy companies compostable packaging is where their sustainability efforts lie. This puts the burden of proper disposal on the consumers and the municipal solid waste infrastructure of their community. Each of these so-called lower impact toy solutions are delaying the inevitable since they do not mitigate all plastic and still promote overconsumption.

There are smaller toy companies that make their toys from wood and fibers. Manhattan Toy Company, PlanToys, and Brio focus on wooden toys, and can claim longevity and durability by choosing this material (Corsillo, 2021). Low impact soft goods toys are harder to find. Since price-point is paramount in the toy industry, environmentally sustainable soft goods struggle to compete and must appeal to consumers with a strong narrative. Hazel Village, an organic stuffed animal company, creates personified woodland creatures with clothes and accessories made from natural fibers to foster a special long-lasting imaginative play experience (“About Us”, n.d.). The relationship to the animal is not the only thing that makes a stuffed animals special. Children experience anxiety when learning new things or in new situations. Soft textured objects, i.e. stuffed animals and blankets, can be comforting and calming securities in these stressful moments. This attachment to the comfort that these soft textured provide created a longevity to the child’s relationship to the object (Fortuna et al., 2014 and “Why", 2020). Is there a way to combine the success of these more eco-minded toy companies and create something that

utilizes both soft and hard organic materials while also keeping in mind repair and an open-ended play structure?

Play Types:

Large amounts of toys lead to over stimulation, poor mental health, and difficult behavior (“How”, 2018). My exploration of how the act of play is structured may affect how we buy toys in the future. There are developmental merits to both structured and unstructured play. Unstructured play allows for a vivid imagination to be formed and helps the child create self-reliance and confidence. Structured play allows for specific learning and a dopamine release once the child has fulfilled a set goal. In both cases playing with an older caretaker can have bonding benefits. In structured play situations, the guidance from a caretaker to reach the goal of the game or to show an exciting aspect of a new toy creates the scaffolding for having new experiences and future learning. In unstructured play, the caretaker can be another character in the drama or helper in the construction of a freeform built masterpiece. The materials of the toys can directly affect how children play with them, how durable they might be, and their lifespan beyond their first user. I have created a toy system that uses wood and felt to create a modular toy that can test the possibilities of structured and unstructured play (Pyle et al., 2020).

Problem Statement:

How can a system of play challenge the status quo of the plastic toy industry with design longevity, sustainable materials, and an end of toy life that doesn't contribute to the crisis of dwindling landfill space? Additionally, by creating a product that encourages valuable play for children at multiple ages the inherent nature of the toy combats the American culture of overconsumption and overstimulation.

Project Overview:

I chose to create a toy that is a modular, build-able vehicle kit. Designed for ages four and up, this vehicle promotes dexterity and fine motor skills during the building process, and physical properties and imaginative play scenes once assembled. This system, named Wheel•ems, tagline “a heart felt toy

system", aims to reduce environmental impact relative to most toys produced today, while also providing a fun, durable, and engaging play. Made from one hundred percent Merino wool felt and hardwood, these sets come together with just a few pieces to create colorful vehicles. I chose felt to work with because from my research and exploration it is a lower maintenance organic materials option. Once cut into proper shape there is no sanding or shaping or seams to remove. It's soft enough to not hurt anyone when dropped or thrown, and durable enough to hold up to general wear and tear. I purchased remnant pieces from FilzFilz acoustic panel designs as the main material for my toy system. ("About Felt - FilzFelt", n.d.). Early concepts for Wheel•ems are seen below in Fig. 1. They show an iterative process of trying many form factors and then focusing on the van to continue to develop, based on user feedback.

Motorcycle

Taxi

Car

Bus

Van

Van Version 2

Van Version 3

Fig. 1 Early toy concepts

Quarter inch thick wool felt, creates the main body pieces of each of these vehicle designs. The felt is augmented by various wheel shapes and dowels acting as axles. These design iterations allowed for lively testing with my intended age group and design refinement. This system uses sustainable materials such as wood and felt to create a modular system to test the possibilities of structured and unstructured play.

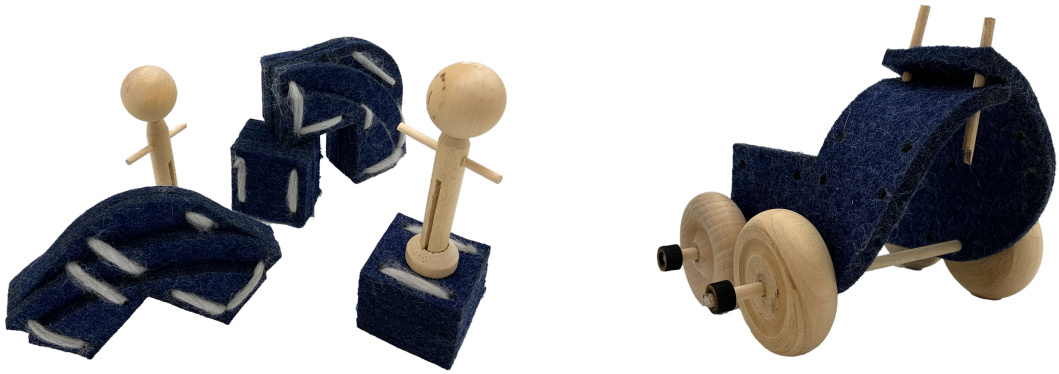


Fig. 2 Early Ideation and Material Exploration

Before my decision to create vehicles, I was excited by the uniqueness of the felt material. When cut into squares and layered it created soft blocks and dense shapes, but when bent and connected with dowels, the felt creates volumes and enclosures. Not only was I inspired by the forms the felt created but the sensory experience of touching and working with the felt.

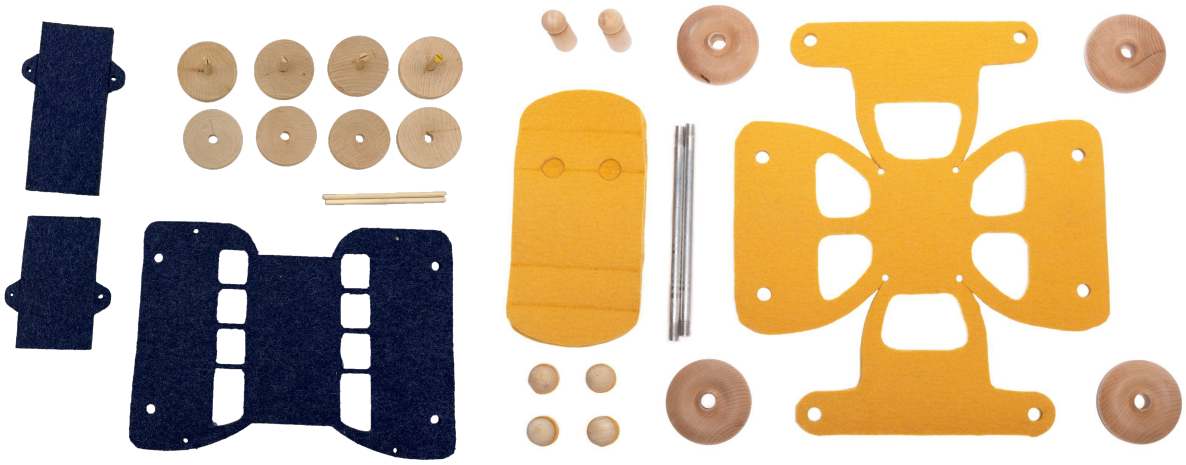


Fig. 3. The Evolution of the Kit Pieces

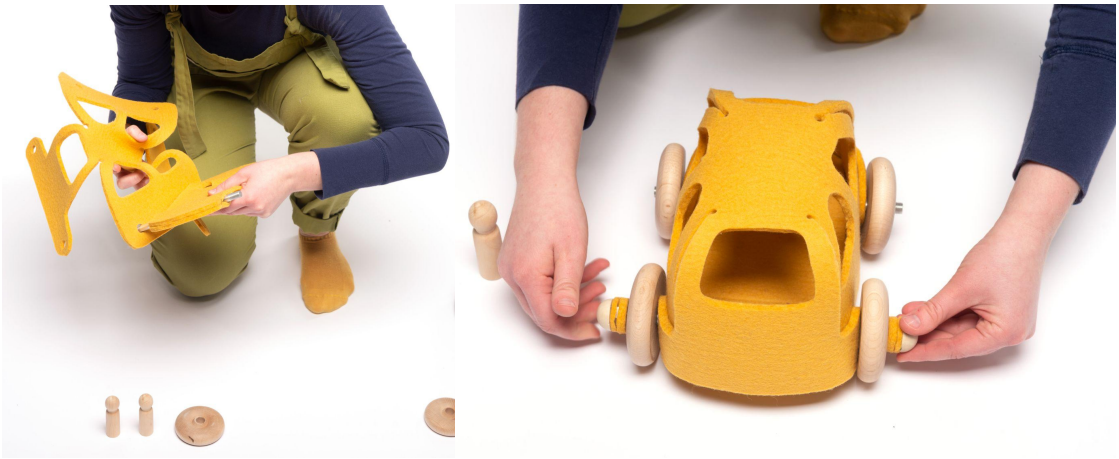


Fig. 4. Images of the Wheel•ems being assembled

Initial designs and research with children showed that learning that a two-dimensional shape can be loosely folded into a three-dimensional form is an exciting physical concept to introduce. When shapes are introduced usually around kindergarten age, children learn that there are flat shapes with sides and vertices. The complicity comes in two ways as a third dimension is introduced. To build a three-dimensional form takes a series of flat sides which when combined in a two-dimensional shape is not recognizable as its eventual three-dimensional form. Additionally, round forms are difficult to express. The evolution from a circle to a sphere is a large mental leap. The curved and flat facets to the Wheel•em vehicles create a relatively complex form. The assembly of my Wheel•ems kits can be an aid in this geometric learning of the transition from two-dimensional shape to three-dimensional form.

Fig. 5. User testing at the Rochester MakerFaire

Play Testing:

In the testing of my project, I learned the role of both structured and unstructured types of play. I was able to bring some of my early felt prototypes to the Rochester MakerFaire. There, I showed over 50 children ranging from ages two through twelve years old my toy systems and observed their preferred play styles. A few children came up to my table and wordlessly rearranged the roads, trees, and other props I had set in place. The rest wanted to create something more finite. Without direction of how to create the suggested vehicles, half of the remaining visitors were able to put together a vehicle on their own. The other half were completely content to play freely with the felt and wood pieces that I put before them. Once I walked them through the steps of creating the vehicles, each child was able to have an object on wheels to zoom around the play space. Then the vehicle itself took a starring role in the imaginative play scenario each child came up with. The vehicle system illustrated a finite solution and an exciting outcome, while the open-ended pieces allow for uncharted exploration and imagination. Both have their merits in early childhood development.

Conclusions:

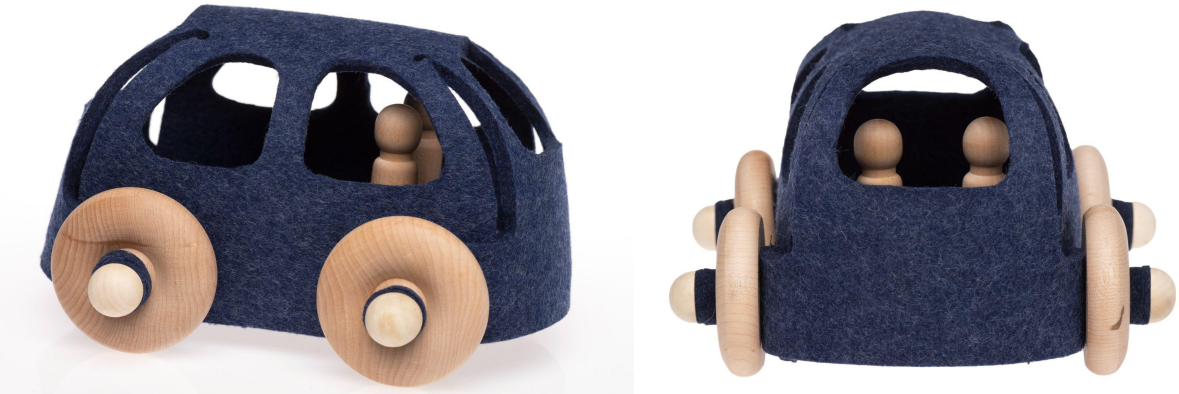


Fig. 6. Side and front view of final design

My final designs are a product of research in child development, play observation, and testing. The next step is to expand my line to include more vehicle types and forms that could act as other entities in the world building of the original vehicle's system. This will allow for even more exciting structured and unstructured play experiences. The impact and the sensory relationship with the material used is vital. It is my hope that more people explore truly sustainable toys. Like the other soft good toys on the market the material for my toy system is expensive. With more demand the materials pricing will come down to be more accessible and maybe be able to compete in the market at large. Overall, the quality and narrative of sustainability for a low impact toy makes it competitive. For Wheel•ems, the value, durability, and sensory experience of its organic materials create an emotional attachment, and long-term staying power. But how does Wheel•ems combat the main reasons for toy disposal? It can be dismantled, and if a piece is lost or breaks, a replacement can give it new life. If a child grows out of it, the repeatable play value makes this toy something you'd want to pass on. If it reaches the end of its useful life, the kit is fully compostable and recyclable. Wheel•ems' harmony of soft and hard, structured, and unstructured, and durable and biodegradable can be the beginning of a cultural shift in the toy industry.

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