the collection of kitchenware
that became a family

Bethanie Martin

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Birmingham City University | BA (Hons) Product and Furniture Design

context

The Hemi project revisits four kitchen products with a focus on the user-product interaction. The aim is to add joy and a sense of accomplishment when undertaking the task, whilst improving usability and functionality. The resulting Hemi range combines personality and ease of use in a family of fun products that will delight the user.

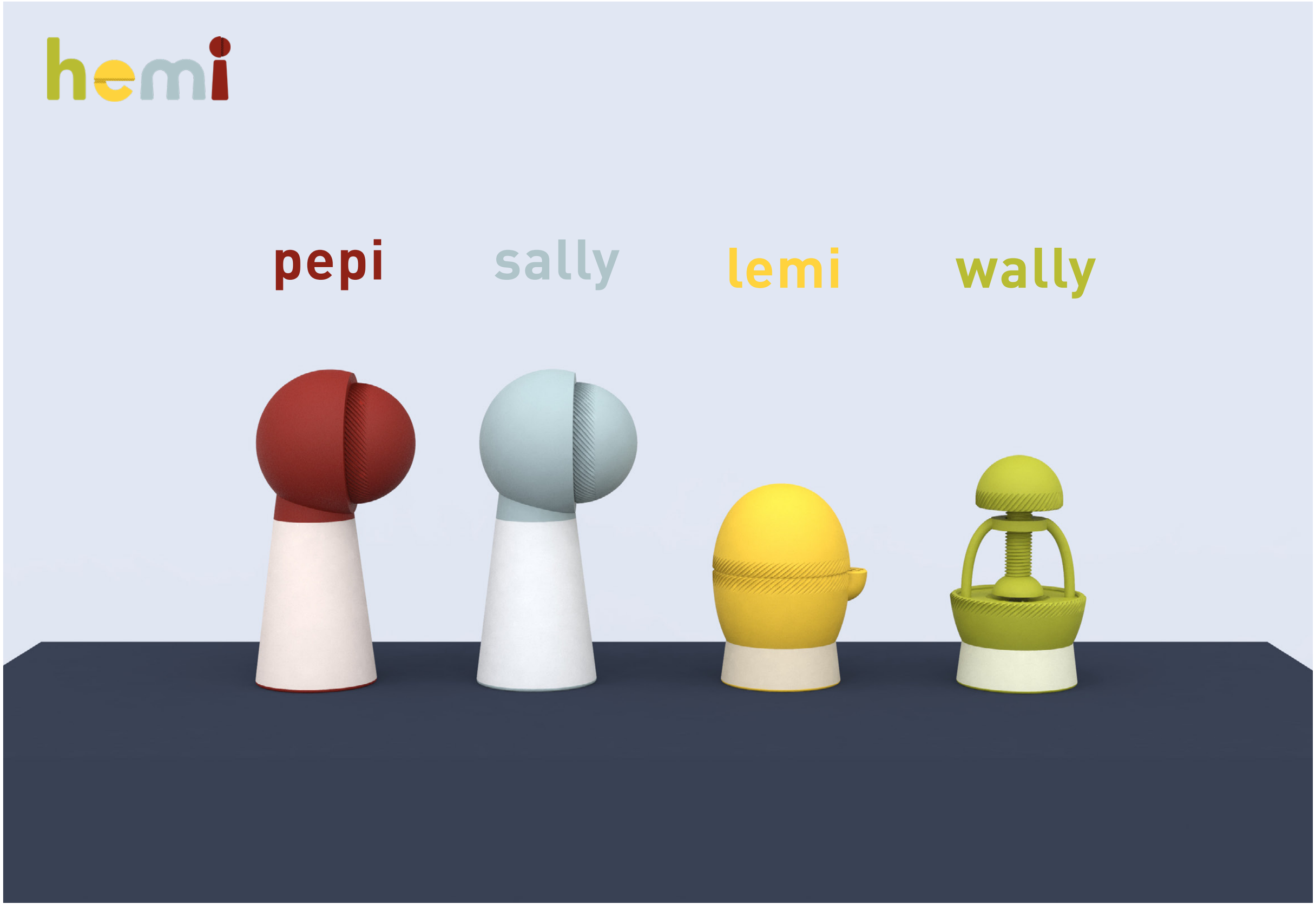
prototyping and testing the Hemi range

wally - nutcracker

lemi - lemon squeezer

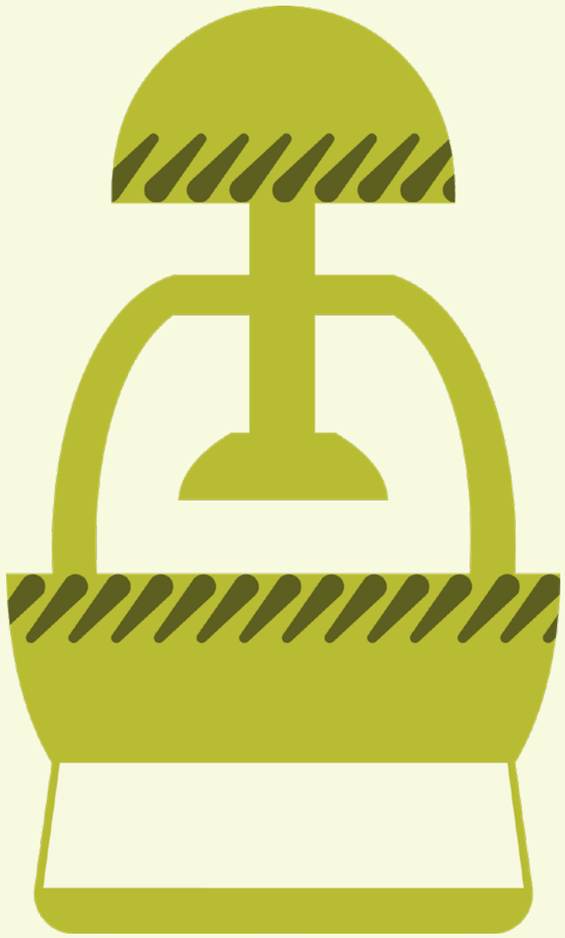
sally / pepi - salt and pepper grinders

hemi



wally (nutcracker)

design development



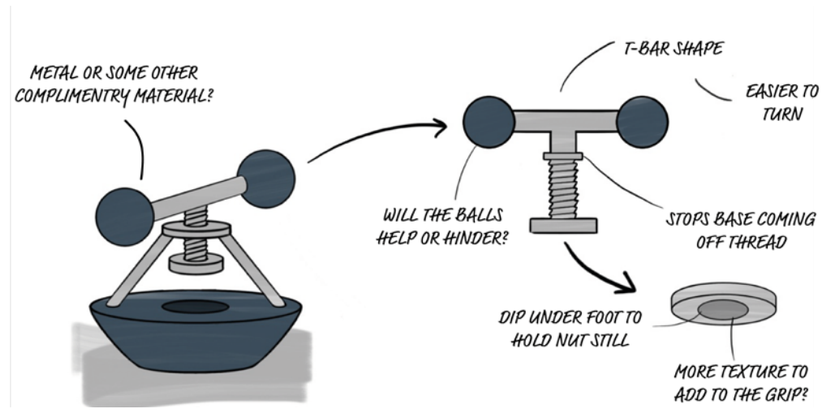
initial concepts

These sketches are initial concepts of the nutcracker, known as Wally. The key areas of focus were; a waste space for the shells, design for disassembly, and user-product interaction.

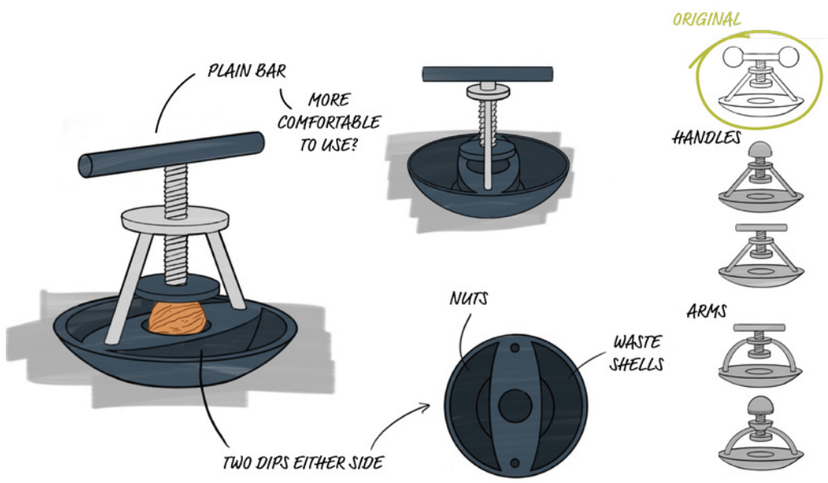
development

Development sketches of each version were translated into 3D printed models to test the concepts physically, allowing observations to develop the product further into the next form. These are the four most important versions throughout the development process.

v1



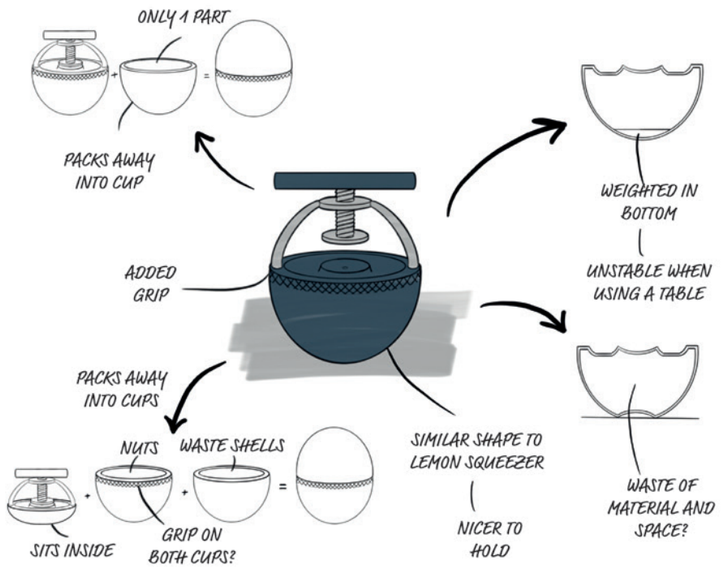
v2



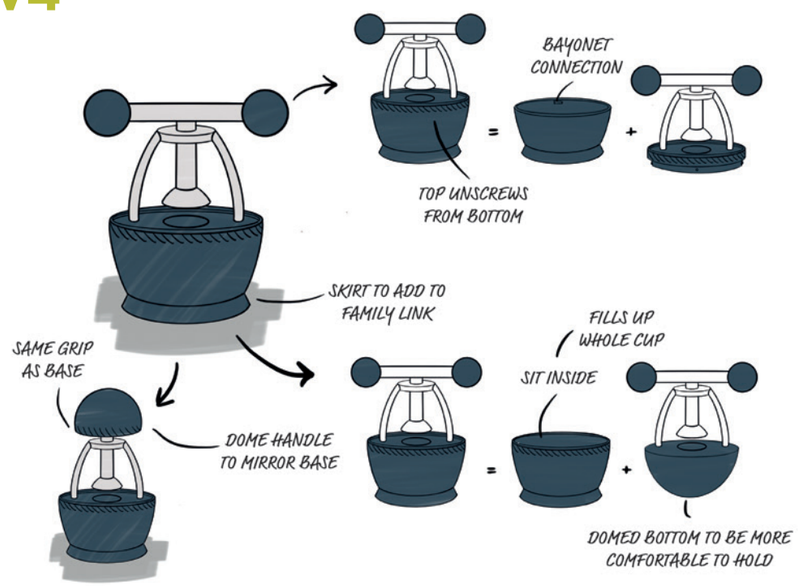
testing models

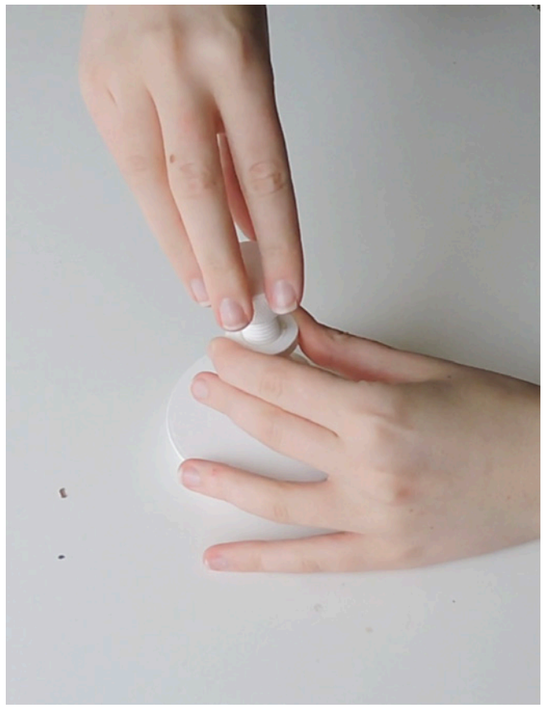
As interaction is one of the main points of focus for these products, each one needed to be thoroughly tested by a range of people to ensure comfort and ease of use.

v3



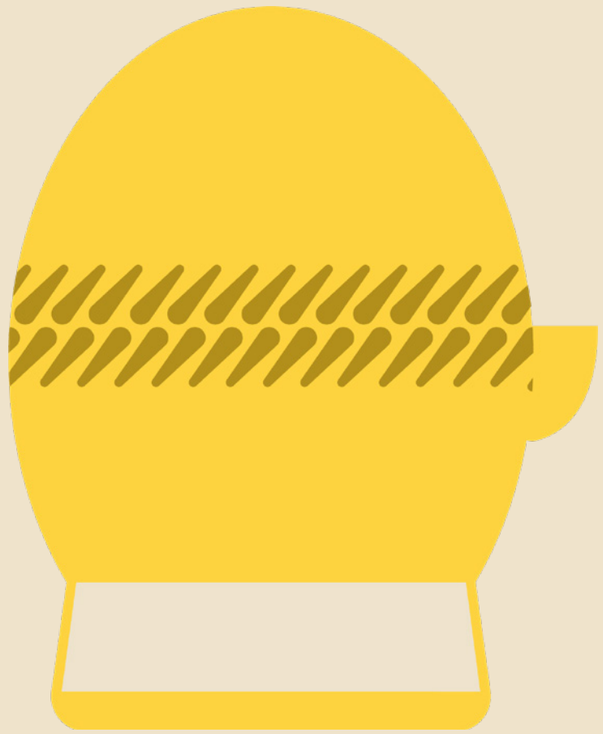
v4





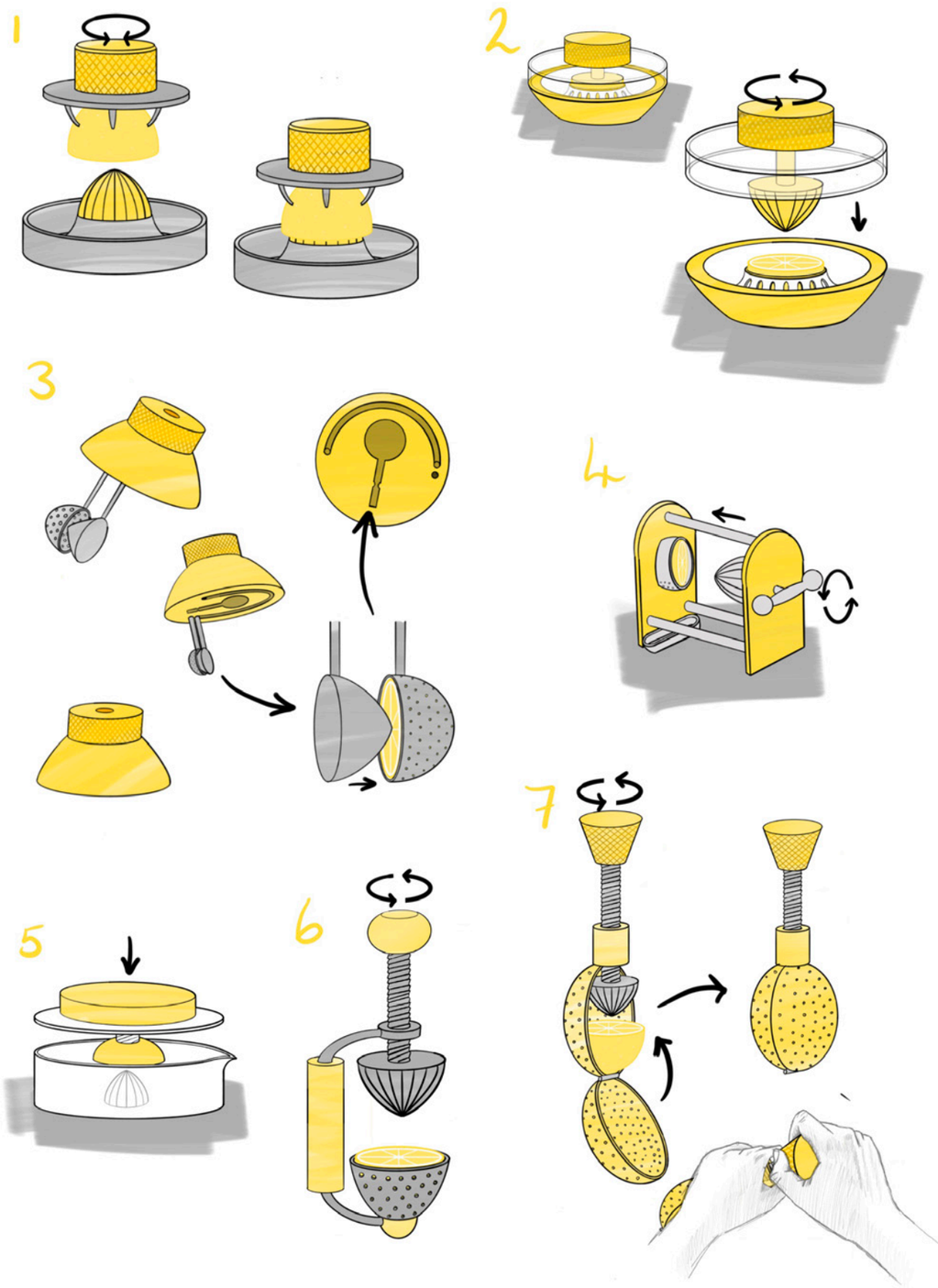
lemi (lemon squeezer)

design development



initial concepts

These sketches are initial concepts of the lemon squeezer, known as Lemi. The key areas of focus were; a new and fun way to squeeze a lemon, stop juice getting on the users hands, stop pips and pulp from in the juice, design for disassembly, and user-product interaction.



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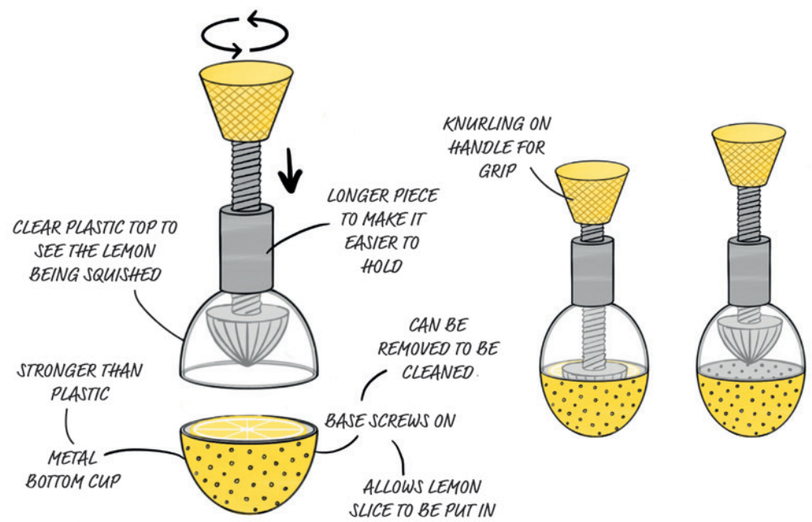
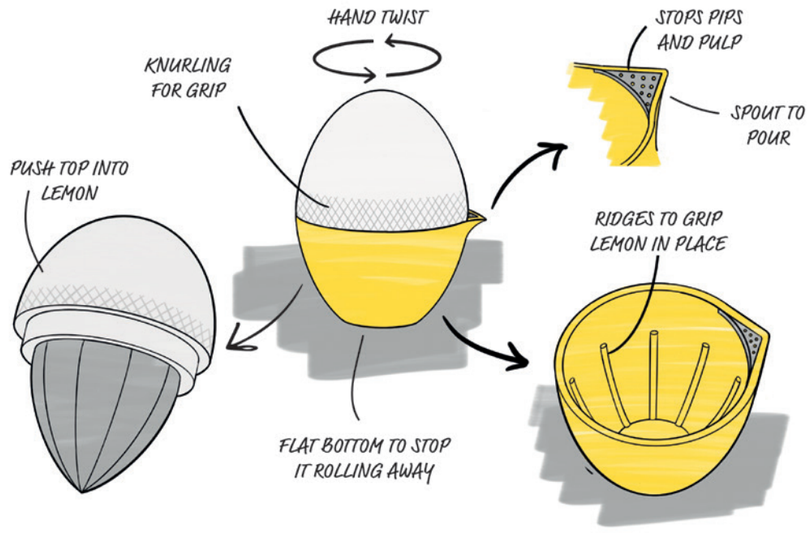


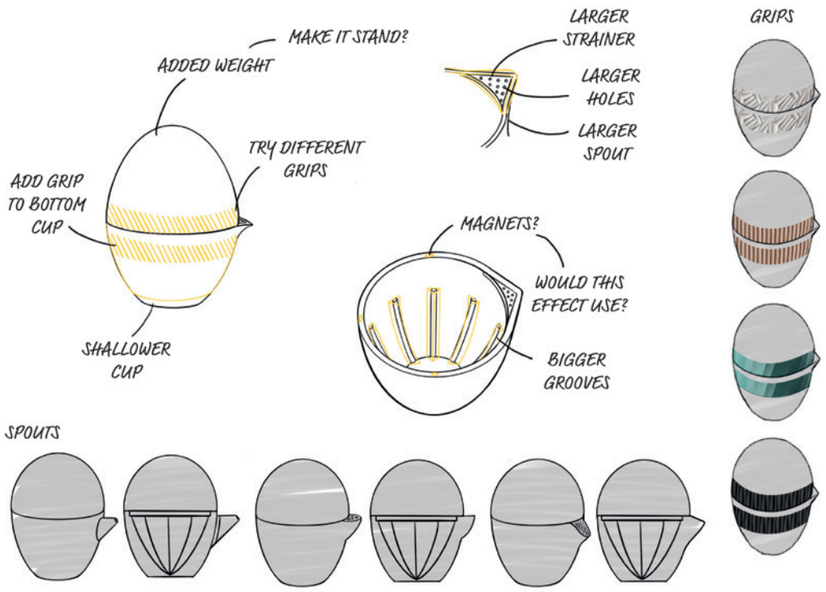
v2



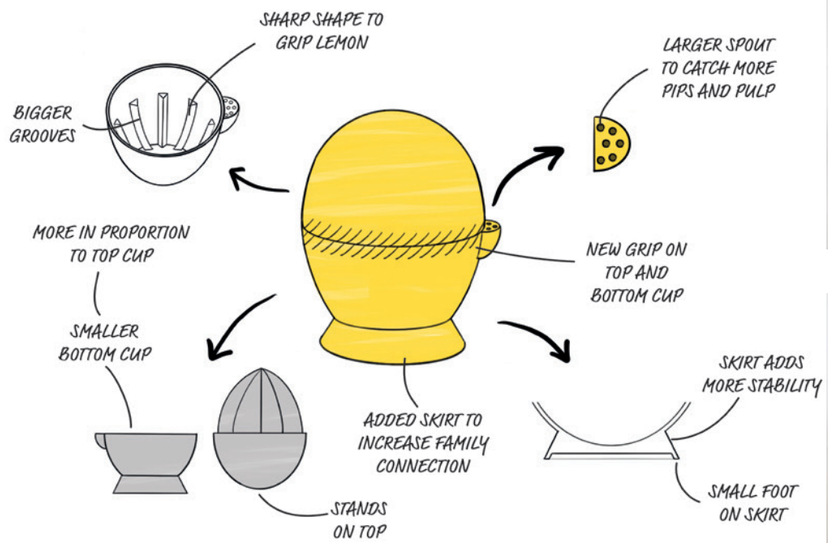
testing models

A crucial part of developing Lemi was physically testing out every version. Using lemons and 3D printed models highlighted previously unseen problems and allowed other people to try them out to get different opinions and perspectives.

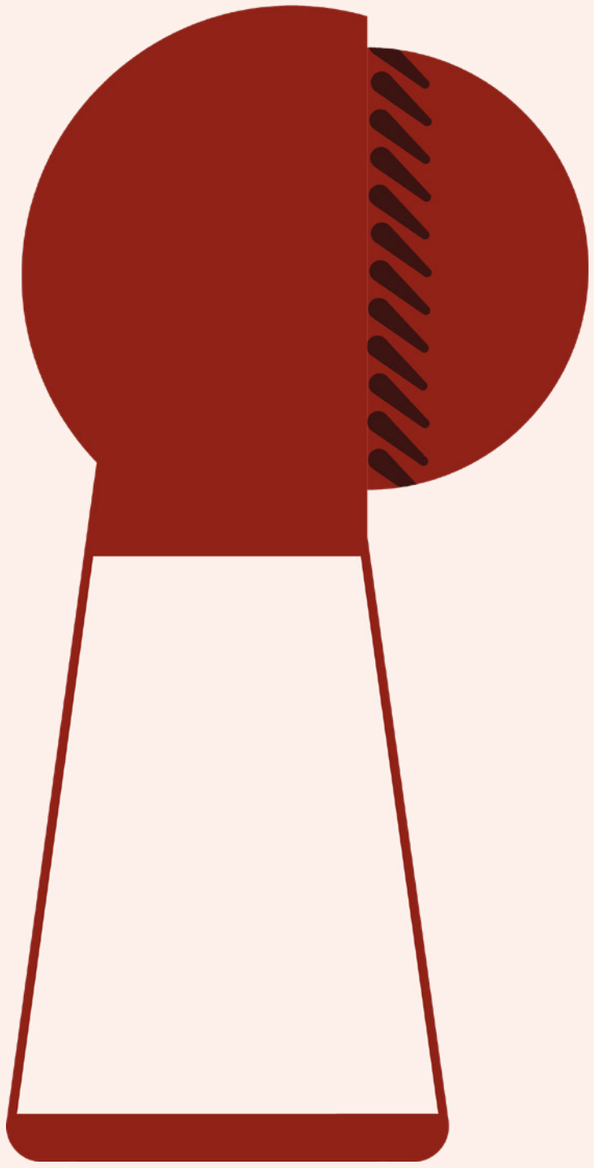
v3



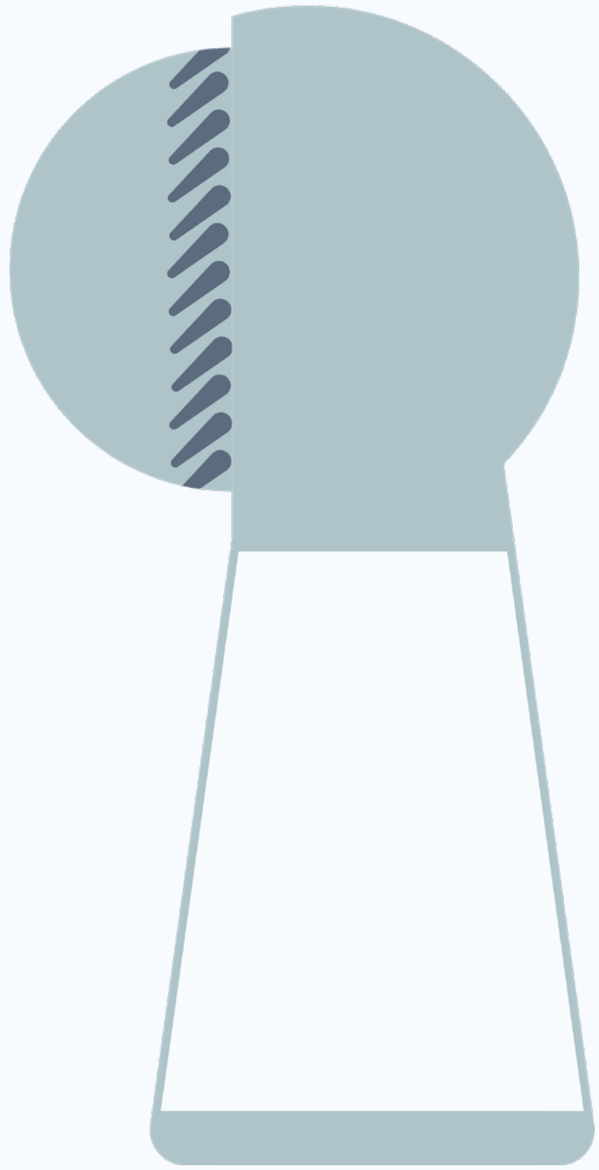
v4



pepi (pepper grinder)
design development

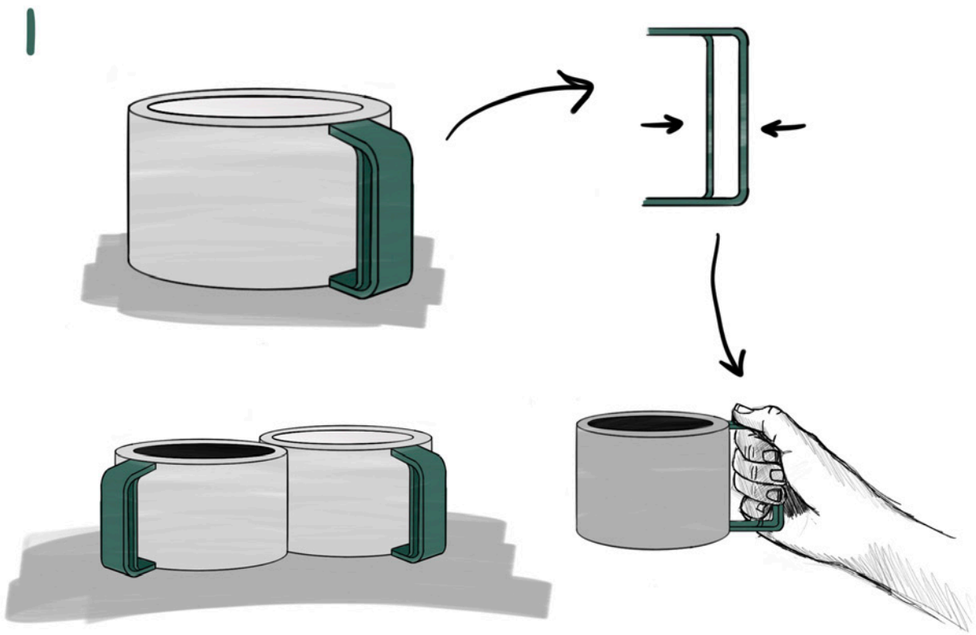


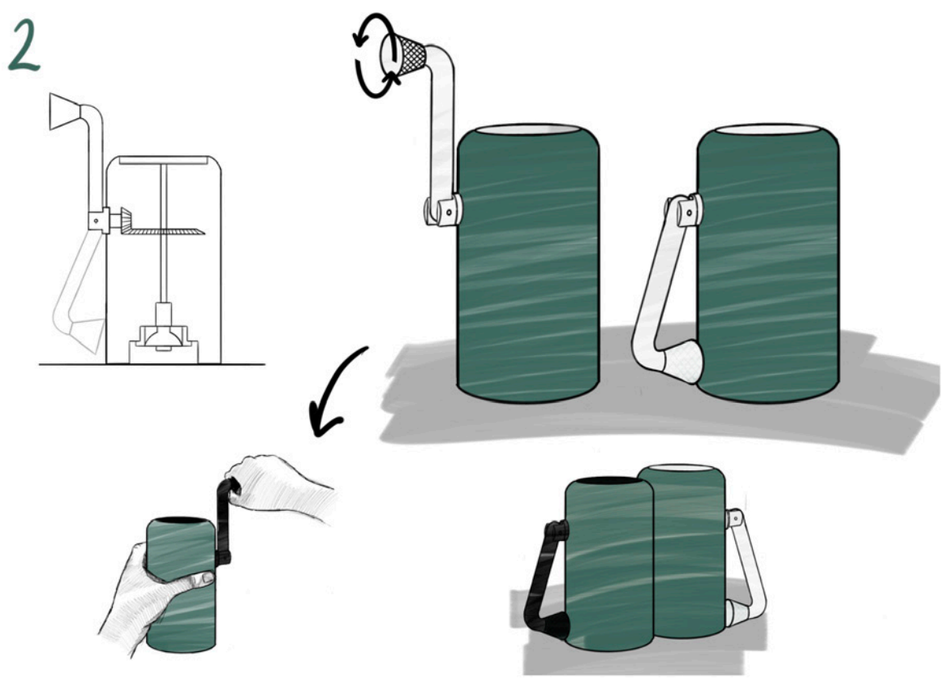
sally (salt grinder)
design development



initial concepts

These sketches are initial concepts of the salt and pepper grinder, known as Sally and Pepi. The key areas of focus were; design for disassembly, user-product interaction, and creating a different point of contact that would be easier and more comfortable to use.





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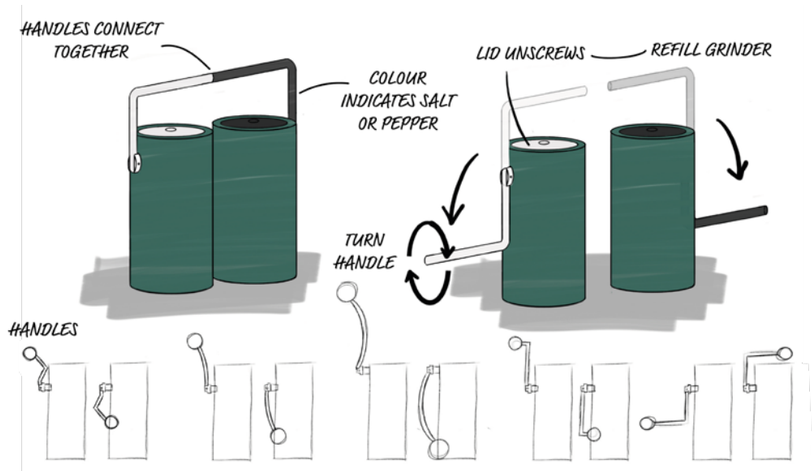
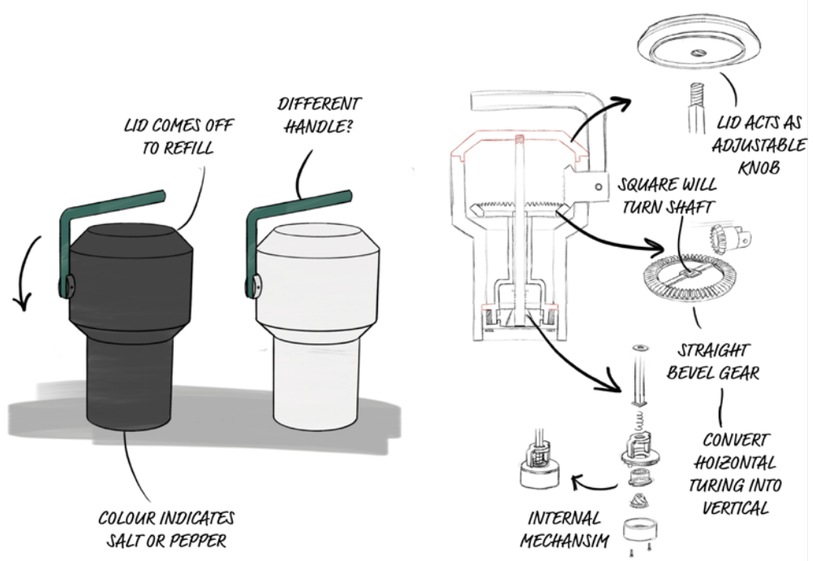


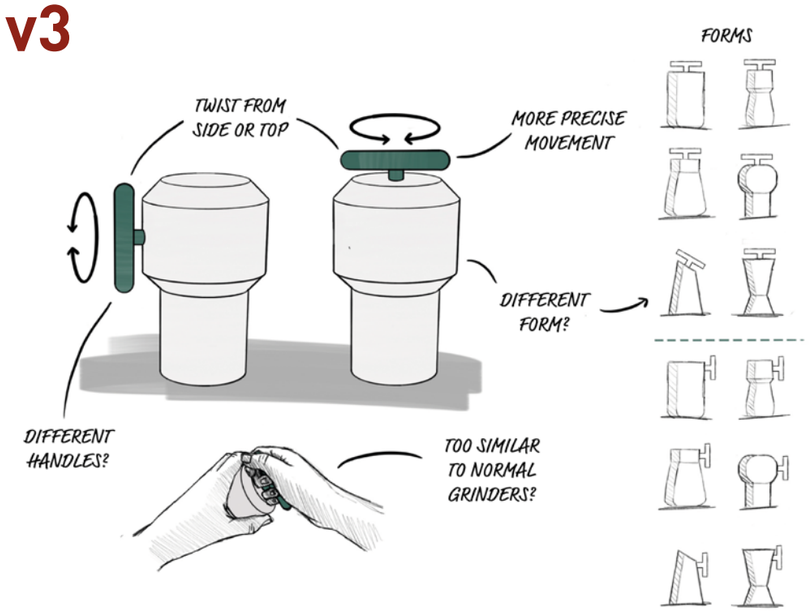
v2



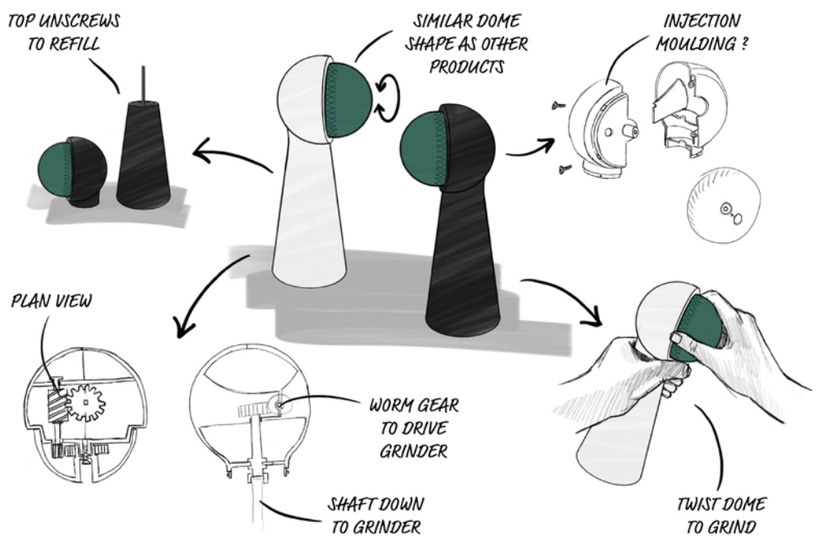
testing models

Each model helped to develop the mechanism inside as well as the visuals on the outside. By 3D printing working mechanisms and accurate models, the concepts could be tested thoroughly and allowed other people to try them out. This helped to develop an interaction that was fun and comfortable to use as people could give different opinions and perspectives.

v3



v4



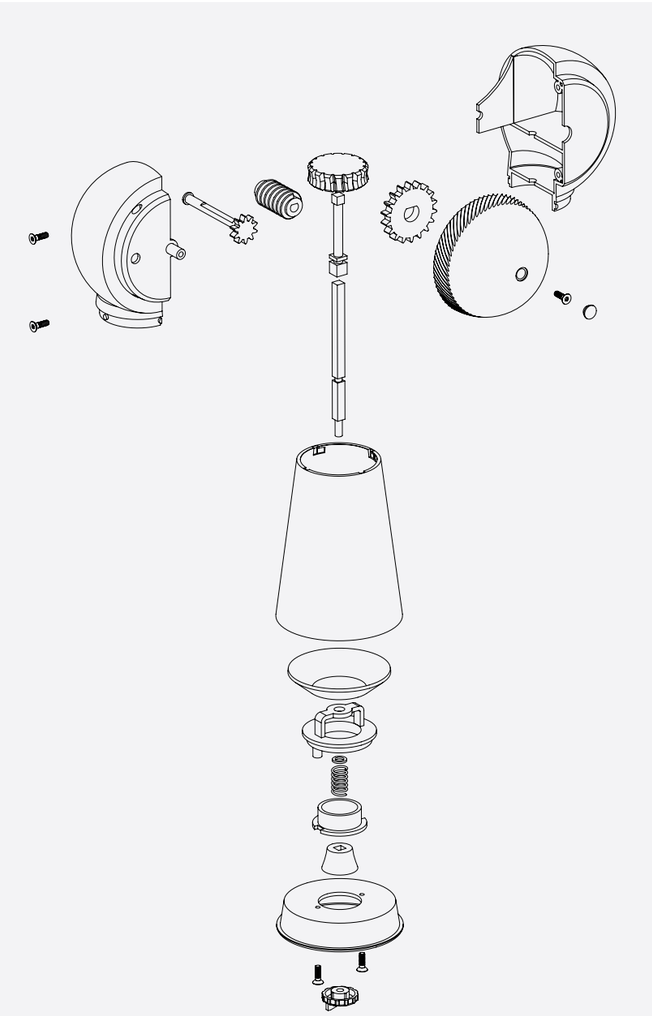
environment

hemi

environment

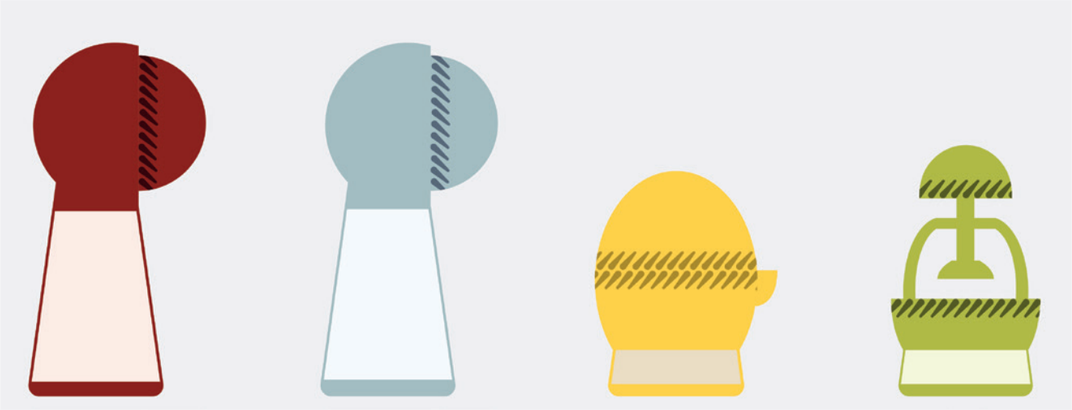
Whilst plastic was necessary to ensure a hygienic, durable and cleanable product, environmental considerations drove many design decisions. Each of the four products have been designed for disassembly at the end of their life, with no adhesives or dual-shot mouldings incorporated.

Maybe more significant, however, is the aim to create a product that people want to keep and display in their home as a conversation piece, even once they no longer use it as a functional product – much like the Philip Stark Juicy Salif. The aim is that by giving the products a personality the connection between the user and product is strengthened and therefore the products longevity is increased.



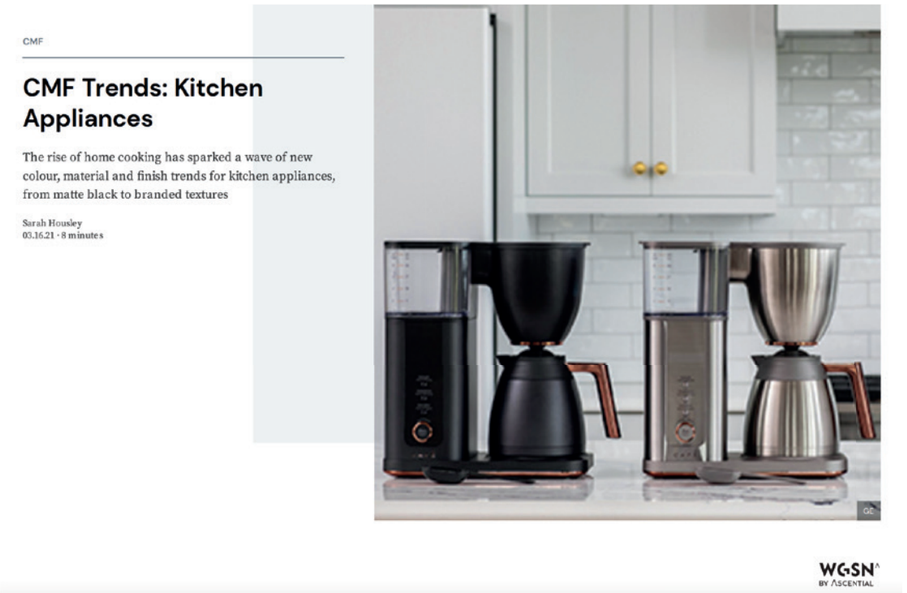
sally/pepi exploded view

colour



colour

Using colour trends in kitchen appliances helped to decide on suitable colour variations for the collection. From the trends discussed in the report the juicy brights and modular colours trends suited the playful character feeling that would delight the customer when they used them.



modular colour:

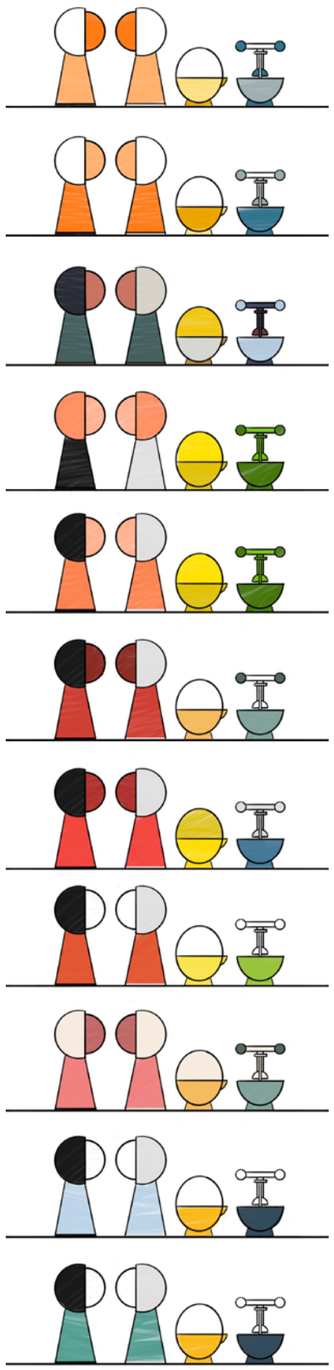
Mix-and-match colour taps into increased interest in customisation, and the use colour-blocking can highlight components and encourage intentional use of appliances, including disassembly and repair.

juicy brights:

Bright colours are paired with gloss or satin finishes for a cheerful, uplifting effect. The uplifting colours are also inspired by cooking ingredients and bring a celebratory feel to the kitchen.

variations

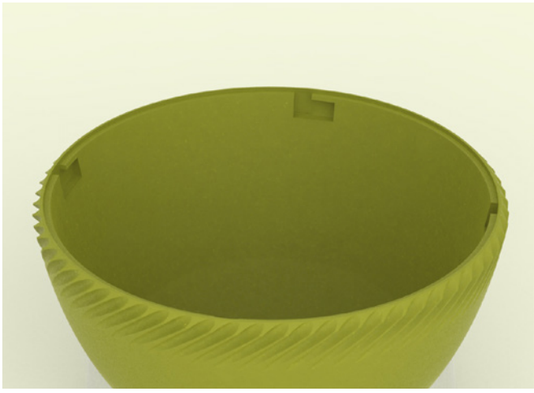
From these trends, variations were created that were inspired by modular colour and juicy brights. The colours chosen help to indicate their use, dark for pepper and light for salt, but they also needed to be bright to give them a fun and playful look.

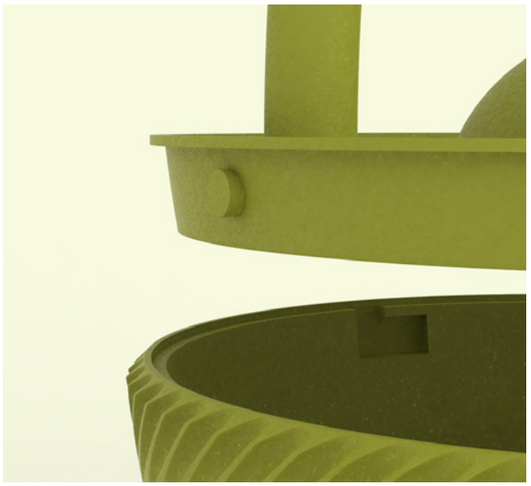


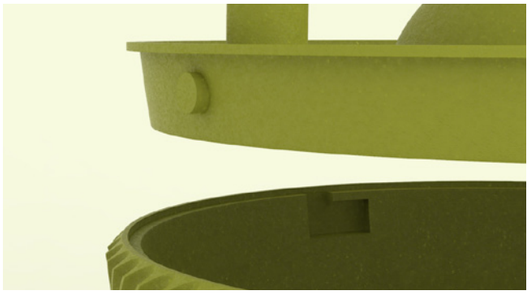
final colours

final outcome

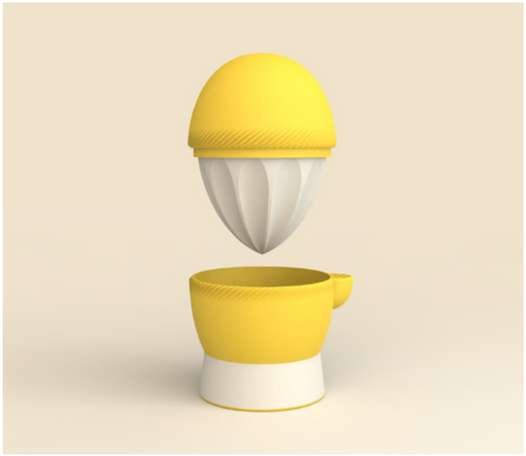
wally

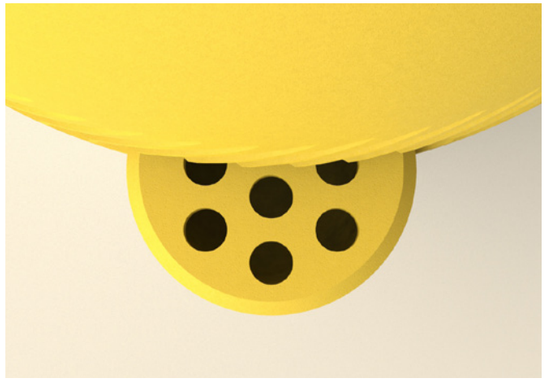


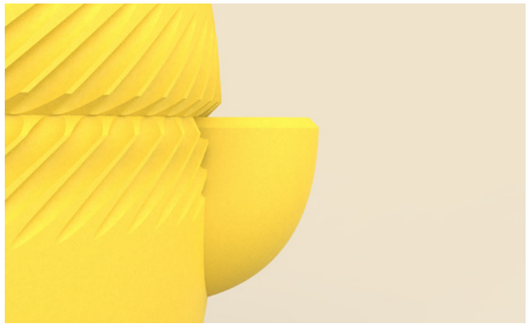


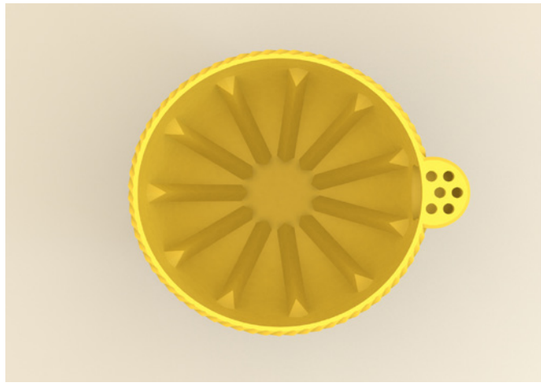


lemi

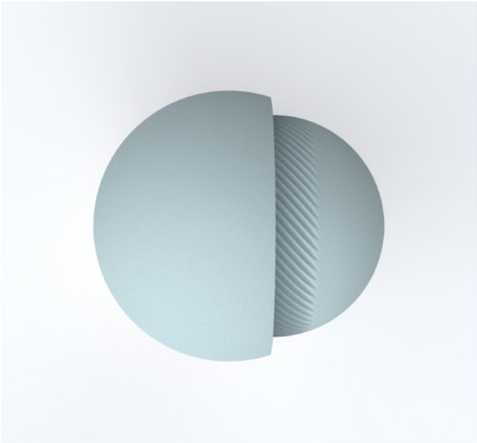


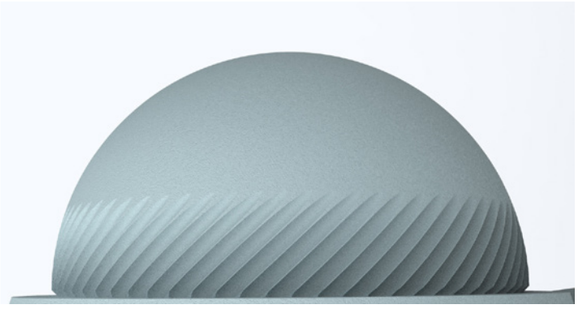


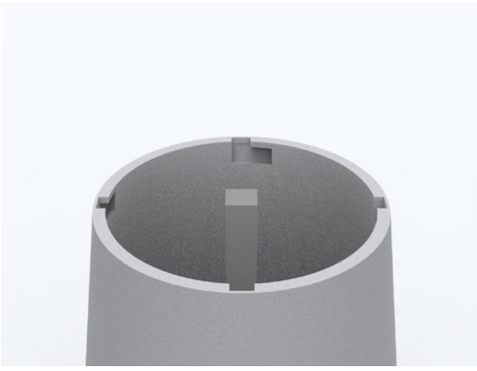




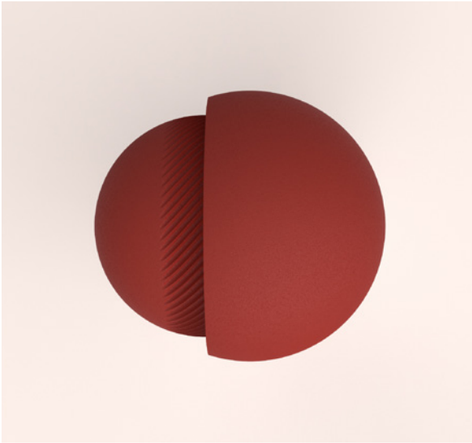
sally

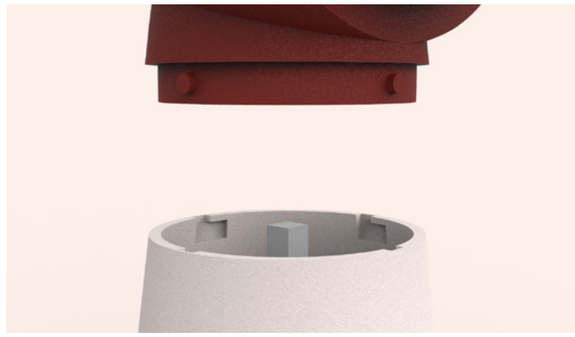


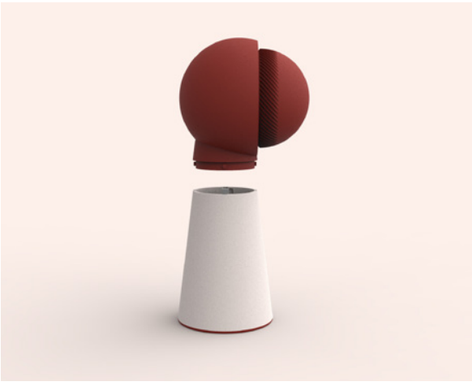


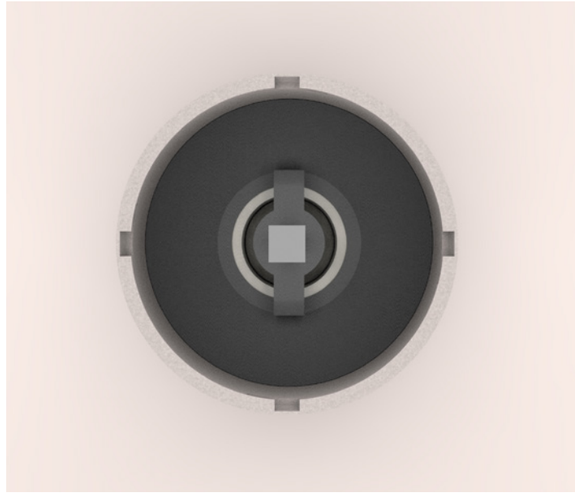


pepi









manufacture and costings

Cost to manufacture has been based on a batch of 5000. The price to manufacture could decrease if the batch number increased, meaning the retail price could also decrease.

wally
HDPE
Glass-Filled Acetal
Injection Moulding

pepi
ABS
Glass-Filled Nylon
Injection Moulding

lemi
HDPE
Injection Moulding

sally
ABS
Glass-Filled Nylon
Injection Moulding

wally

Components	Material	Process	Finish (Included in Prices)	Material Cost per Batch (5000)	Tooling Cost Per Batch (5000)	Production Cost Per Batch (5000)	Total Price per Batch (5000)	Price per Object
Bowl	HPDE	Injection Moulding	Deflashing and Cleaning	£2,328.12	£17,255.80	£652.75	£20,235.96	£4.05
Clamp	Glass-Filled Acetal	Injection Moulding	Deflashing and Cleaning	£1,999.98	£13,694.32	£793.48	£16,487.78	£3.30
Foot and Thread	Glass-Filled Acetal	Injection Moulding	Deflashing and Cleaning	£982.31	£13,483.57	£637.19	£15,102.36	£3.02
Handle	HDPE	Injection Moulding	Deflashing and Cleaning	£527.57	£11,701.41	£508.48	£12,737.47	£2.55
Total Costs	-	-	-	**£5,837.98**	**£56,135.10**	**£2,591.90**	**£64,563.57**	**£12.92**
Retail Price	-	-	-	-	-	**270%**	**£175,000.00**	**£35.00**

cost to manufacture - **£12.92**

retail - **£35.00**

lemi

Components	Material	Process	Finish (Included in Prices)	Material Cost per Batch (5000)	Tooling Cost Per Batch (5000)	Production Cost Per Batch (5000)	Total Price per Batch (5000)	Price per Object
Bottom Cup	HPDE	Injection Moulding	Deflashing and Cleaning	£3,273.65	£24,559.11	£806.92	£28,640.39	£5.73
Bottom Cup Insert	HPDE	Injection Moulding	Deflashing and Cleaning	£27.58	£5,593.28	£471.71	£6,091.86	£1.22
Top Cup	HPDE	Injection Moulding	Deflashing and Cleaning	£4,835.16	£22,232.40	£821.07	£27,887.92	£5.58
Total Costs	-	-	-	**£8,136.39**	**£52,384.79**	**£2,099.70**	**£62,620.17**	**£12.53**
Retail Price	-	-	-	-	-	**270%**	**£175,000.00**	**£35.00**

cost to manufacture - **£12.53**

retail - **£35.00**

sally / pepi

Components	Material	Process	Finish (Included in Prices)	Material Cost per Batch (5000)	Tooling Cost Per Batch (5000)	Production Cost Per Batch (5000)	Total Price per Batch (5000)	Price per Object
Body	ABS	Injection Moulding	Deflashing and Cleaning	£5,371.93	£10,479.36	£1,282.16	£17,132.75	£3.43
Dome	ABS	Injection Moulding	Deflashing and Cleaning	£2,114.54	£12,289.81	£1,047.37	£15,451.01	£3.09
Dome Gear	Glass-Filled Nylon	Injection Moulding	Deflashing and Cleaning	£94.06	£6,607.42	£435.64	£7,136.41	£1.43
Funnel	ABS	Injection Moulding	Deflashing and Cleaning	£479.48	£6,815.33	£850.06	£8,144.17	£1.63
Grinder Part 1	-	Imported	-	-	-	-	£1,658.33	£0.33
Grinder Part 2	-	Imported	-	-	-	-	£1,658.33	£0.33
Grinder Part 3	-	Imported	-	-	-	-	£1,783.16	£0.35
Insert	ABS	Injection Moulding	Deflashing and Cleaning	£927.15	£7,802.59	£1,024.74	£9,755.19	£1.95
Internal Part	ABS	Injection Moulding	Deflashing and Cleaning	£248.94	£9,069.90	£830.97	£10,149.81	£2.03
Left Head	ABS	Injection Moulding	Deflashing and Cleaning	£3,771.52	£21,134.11	£1,273.68	£26,179.31	£5.24
Right Head	ABS	Injection Moulding	Deflashing and Cleaning	£4,463.17	£23,069.03	£1,271.55	£28,804.46	£5.76
Screw Cap	-	Imported	-	-	-	-	£48.00	£0.01
Shaft Part 1	Glass-Filled Nylon	Injection Moulding	Deflashing and Cleaning	£127.30	£5,827.37	£437.05	£6,391.01	£1.28
Shaft Part 2	Glass-Filled Nylon	Injection Moulding	Deflashing and Cleaning	£152.05	£6,263.01	£437.76	£6,852.82	£1.37
Spring	-	Imported	-	-	-	-	£119.00	£0.24
Washer	-	Imported	-	-	-	-	£39.20	£0.00
Worm Gear Part 1	Glass-Filled Nylon	Injection Moulding	Deflashing and Cleaning	£94.77	£6,608.83	£435.64	£7,138.53	£1.43
Worm Gear Part 2	Glass-Filled Nylon	Injection Moulding	Deflashing and Cleaning	£456.15	£8,936.24	£446.95	£9,839.34	£1.97
Worm Gear Part 3	Glass-Filled Nylon	Injection Moulding	Deflashing and Cleaning	£316.83	£10,253.06	£443.42	£11,014.01	£2.20
Total Costs	-	-	-	**£18,617.89**	**£135,156.06**	**£10,216.99**	**£169,294.84**	**£34.07**
Retail Price	-	-	-	-	-	**200%**	**£325,000.00**	**£65.00**
						Sally and Pepi Set	**£600,000.00**	**£120.00**

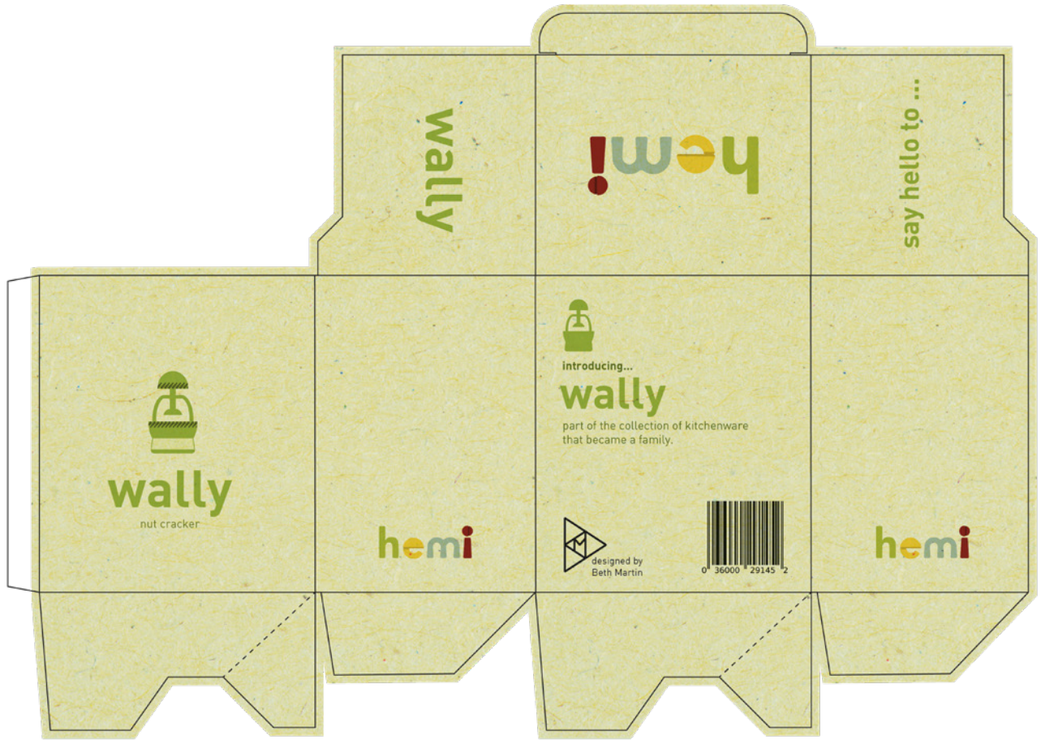
cost to manufacture - **£34.07**

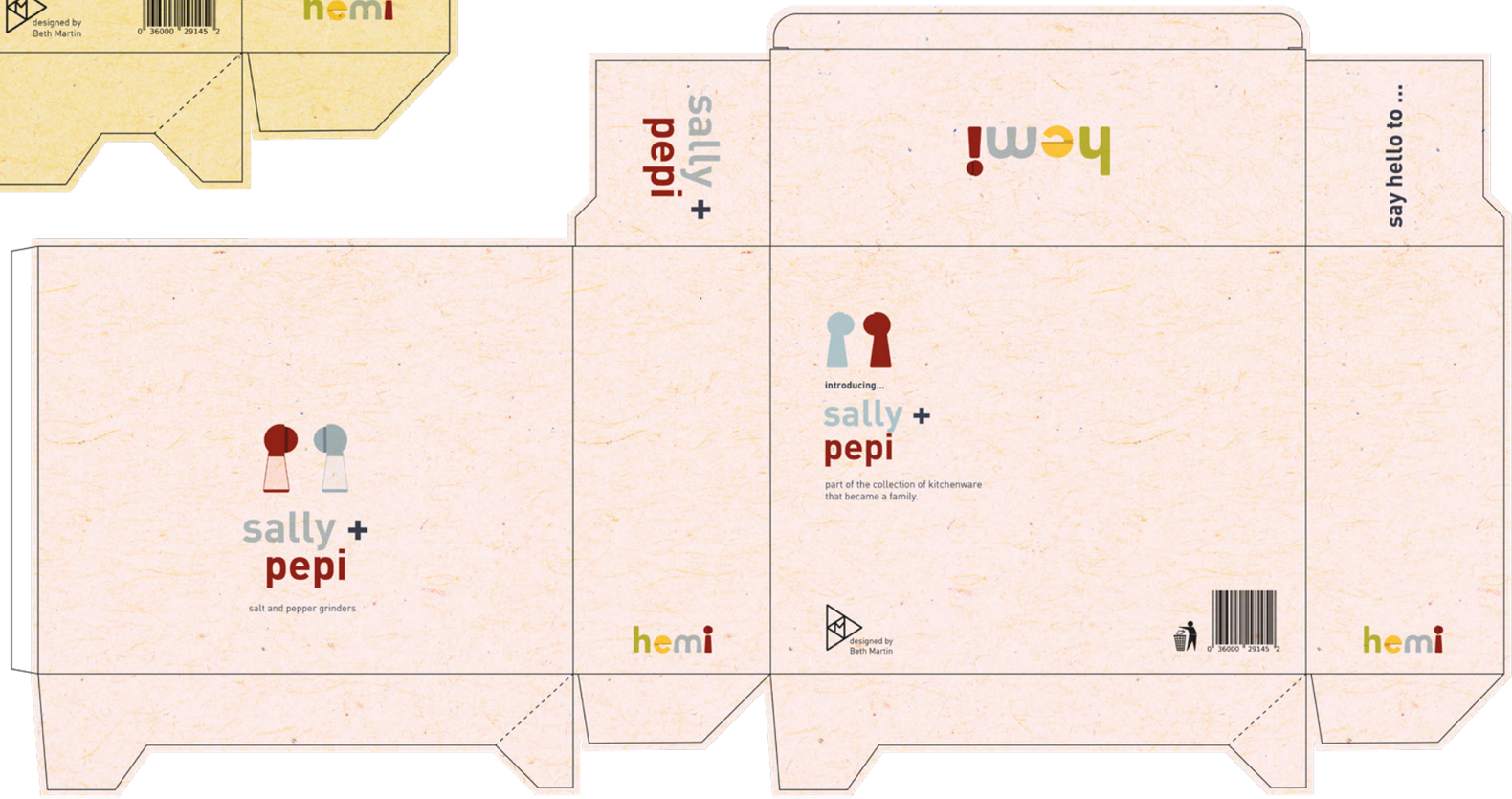
retail - **£120.00 set**

packaging

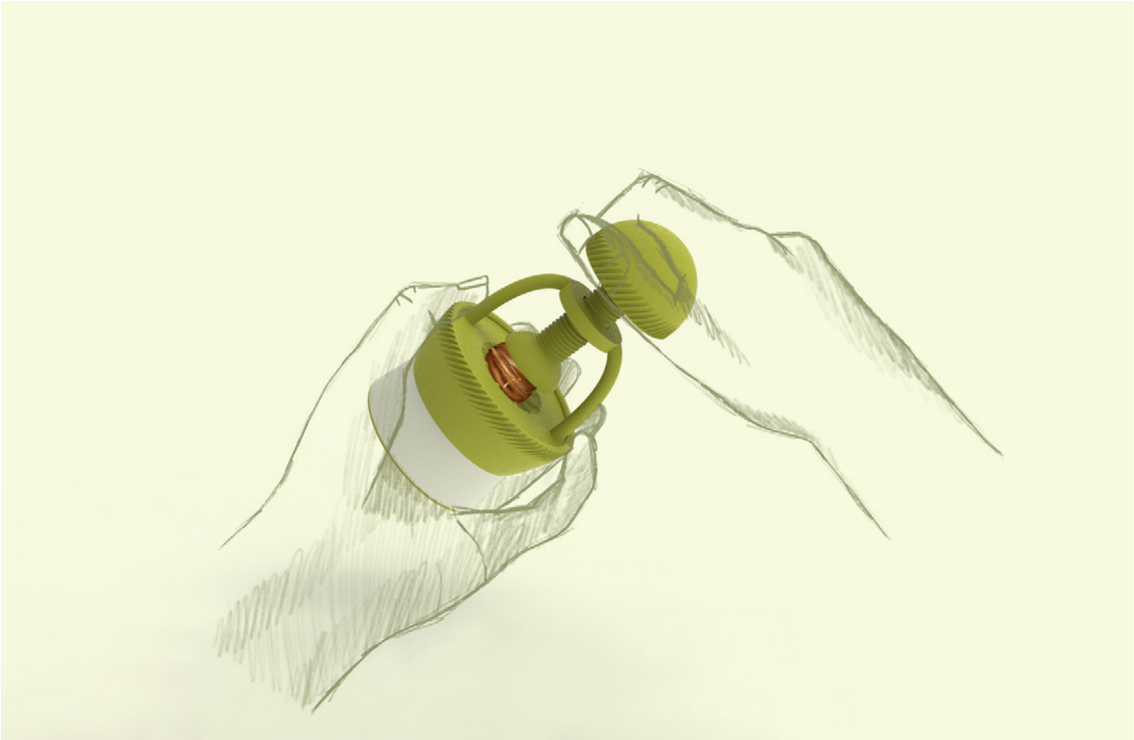
The outside of the packaging would be made from kraftpak, as it is a strong and light weight alternative to normal packaging. It is also fully recyclable, compostable and biodegradable.

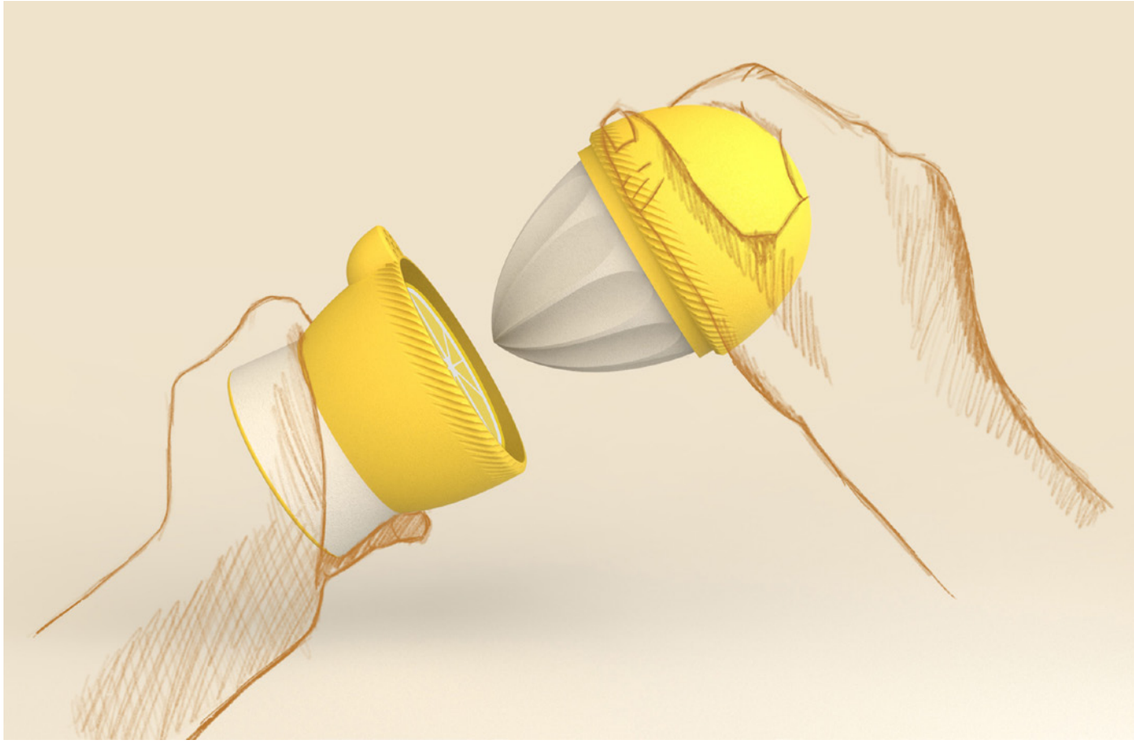
Inside the packaging there are plinths at the bottom with support at the top to hold the products in place. These will be made 405 mic folding box board, which will be strong enough to keep them from moving around inside, and can be recycled after use.

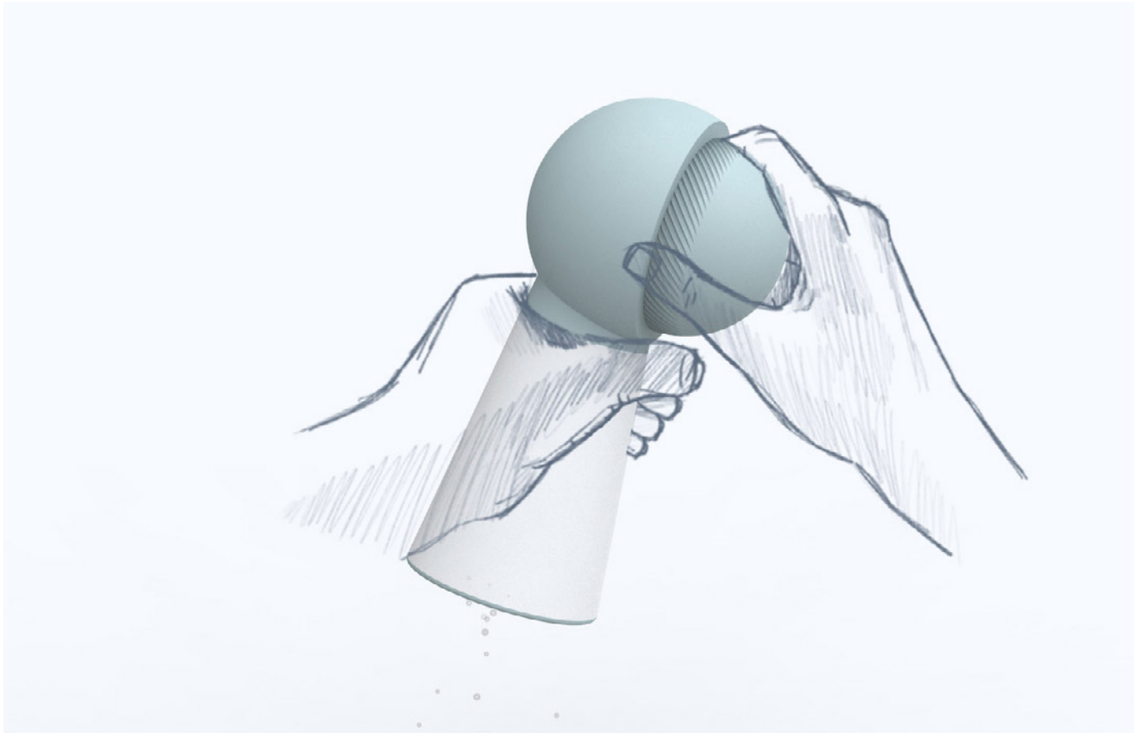




hemi family







to see the hemi family in action click this link... https://vimeo.com/555625796

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