

A FEAST FOR THE EYES: Visualising Flavour-to-Vision Synesthesia

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PROBLEM

Flavour-to-vision synesthesia is a rare neurological phenomenon, which allows a person to see abstract visions while tasting flavours of food and drinks. This project aims to:

1. Gain a clearer insight into synesthetic experiences.
2. Use 3D printing technology to create an artefact that synesthetes (people with synesthesia) can identify with.
3. Raise awareness and appreciation for the rare condition through the accessible medium of art.

MOTIVATION

The choice of using 3D printing to create a semi-realistic artefact was inspired by two related artistic projects, that have tackled the challenge of visualising abstract concepts:



Experimental animation *Synesthesia*. Terri Timely, 2009.

Benefits of realistic props:

- The literal combination of realism and abstraction is surreal but also memorable
- Believability; encourages viewers to associate the topic with reality
- Readily available resources

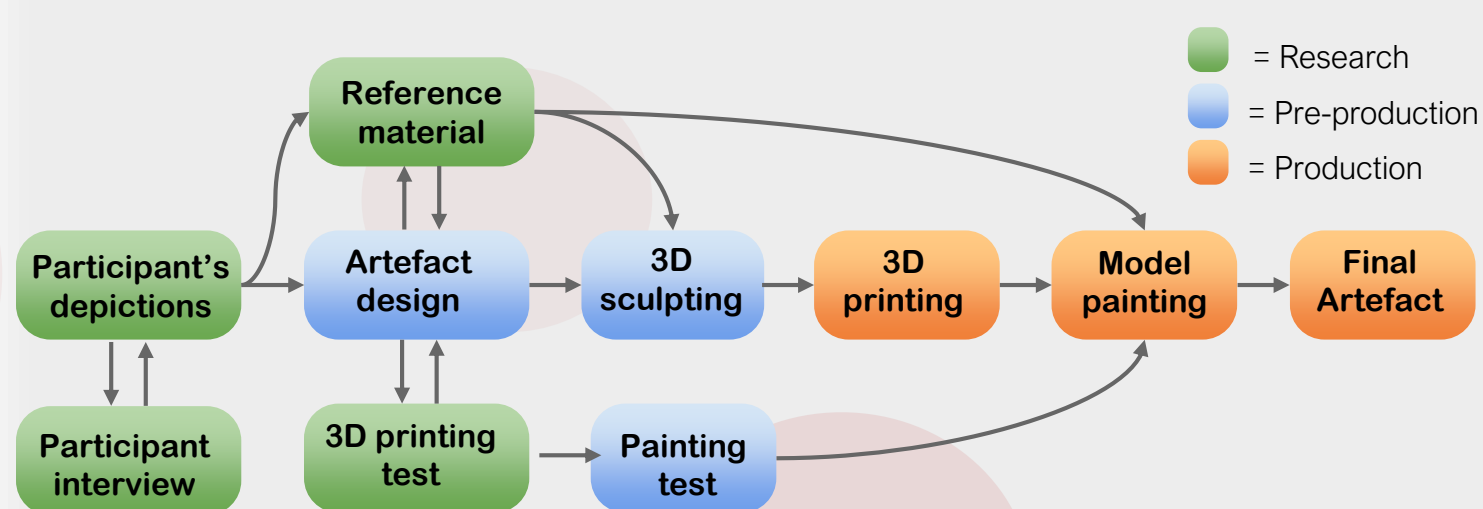


Heinz Beanz Flavour Experience advert campaign. Bompas & Parr, 2013

Benefits of 3D printing:

- Physical artefacts provide an intimate first-person experience
- More freedom with design in digital software
- Precise and reproducible results

APPROACH



Above is the methodology I have used to create the final artefact. Tests on 3D printing material, printer settings and painting techniques were carried out before production to help determine the feasibility of the designs.

CRITICAL ANALYSIS

Successes of the project:

- Gained qualitative insight into individual synesthesia
- Identified an approach to visually communicate an abstract concept in a more accessible form to the general public
- Used 3D printing and artistic practices to accurately produce artefact of intended designs

Weaknesses of the project:

- The results are artistic and interpretational, but not accurate scientific representations of flavour-to-vision synesthesia.
- Printed models still lacked realistic surface properties (e.g translucency)

Recommendations:

- A larger sample of participants and data may provide more holistic and accurate insights
- More accurate representations of synesthetic experience can be explored (e.g using first-person VR experience)
- Other types of 3D printing materials (e.g translucent PLA, PVA or resin filaments) can be explored

RESEARCH & DESIGN

Important findings from academic research and participant study:

- Synesthetic experiences are different for every individual; characteristics can be found on an individual basis, not across the entire population (Cytowic 2003).
- Synesthetic visions can take the form of shapes, colours, textures etc. and can have spatial and depth qualities.
- Synesthetic experiences are consistent, making them unbiased

indicators of flavour (in the case of flavour-to-vision synesthesia).

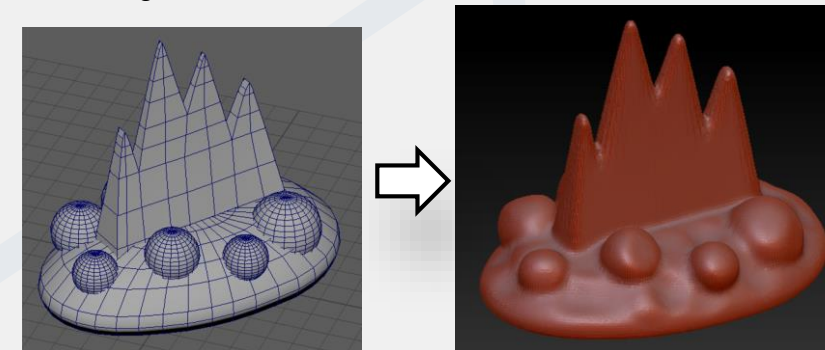
Three participants' synesthetic depictions of flavours:

Flavour	Synesthetic Depiction	Artistic Interpretation
Cappuccino	White cloud-like shape	Cup of coffee with foam
Cappuccino (added sugar)	White cloud-like shape with dots	Cup of coffee with foam and sugar
Vanilla Latte	White cloud-like shape with a swirl	Cup of coffee with foam and swirl
Decaffeinated Instant Coffee	White cloud-like shape with a swirl and dots	Cup of coffee with foam and swirl
Cranberry Sauce	Red jagged shape	Spoon with red sauce
Cranberry - Chocolate - Oat Cookie	Red jagged shape with blue and brown dots	Spoon with red sauce and cookies
Hot Chocolate	Orange and brown shapes	Spoon with orange and brown sauce
Tomato = (ashy background)	Grey square	Plate with grey background and colorful dots
Beef = (waxy specks)	Blue square	Plate with grey background and colorful dots
Wheat = (powdery dusting)	Brown square	Plate with grey background and colorful dots

PRODUCTION

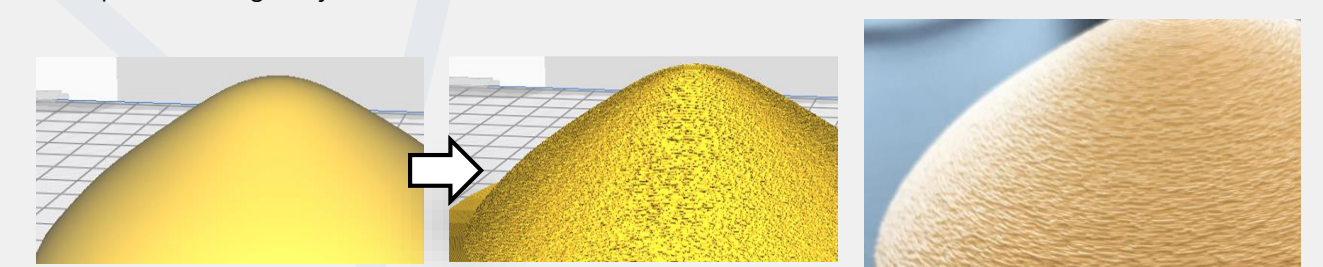
Digital sculpting:

Design blocked out in MAYA, then textural details sculpted in ZBrush using various brushes



Printer setting:

'Fuzzy skin' setting applied to a cone model to produce a grainy surface texture:

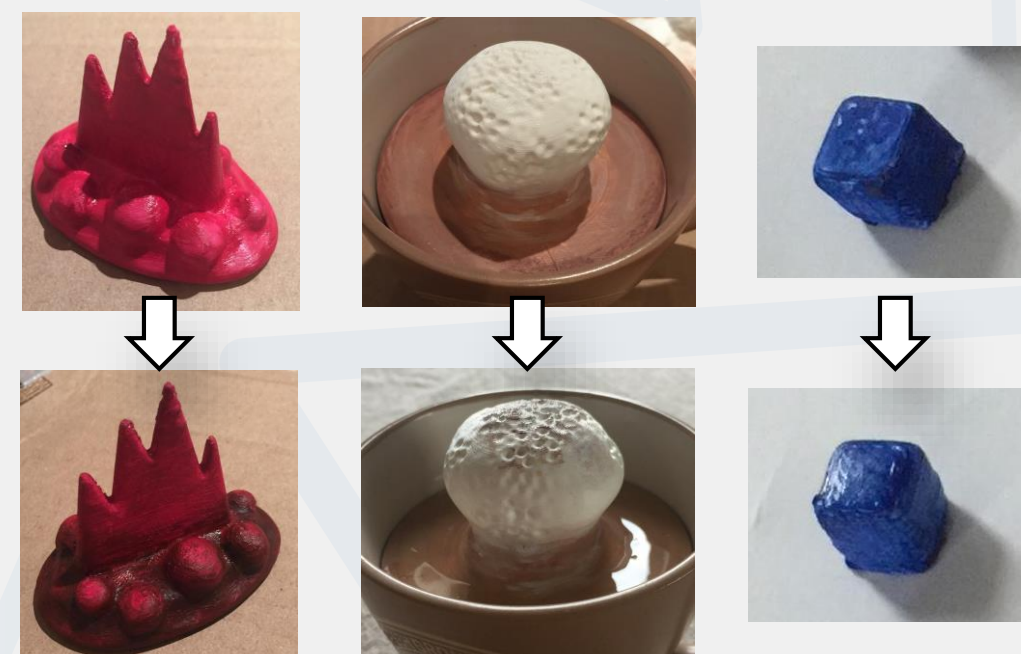


Result intended to look like a 'pile of ash'

Painting techniques:

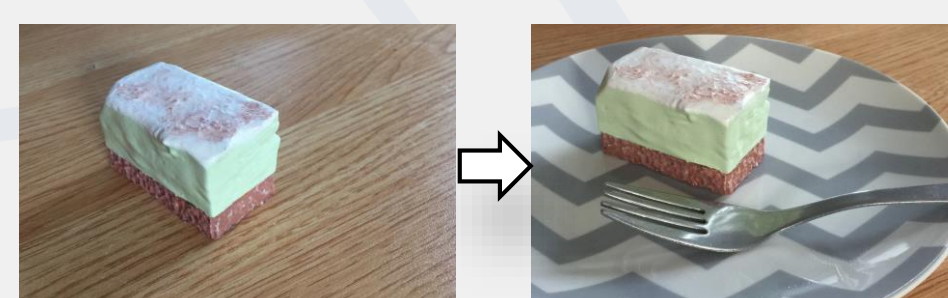
Due to the printed material's solid plastic surface quality, special painting techniques were applied to recreate the illusion of translucency and reflectivity.

Darker and lighter red colours to create depth
Resin varnish used to add reflectivity of liquid
Glossy varnish spray used to make wax-like surface



Final assembly:

A decision was made to utilise readily available tableware as a part of the artefact, to allow the viewers to associate the abstract sculptures with real edible food more easily.



RESULTS

Sculpture 1:

"Synesthetic Cappuccino"
Acrylic and varnish on 3D-printed PLA, a coffee mug
11 x 13 x 10 cm



Sculpture 2:

"Synesthetic Cranberry Sauce"
Acrylic and varnish on 3D-printed PLA, a tablespoon
6 x 19 x 4.5 cm



Sculpture 3:

"Synesthetic Chili Mac"
Acrylic and varnish on 3D-printed PLA, a white plate
5 x 14 x 14 cm



CONCLUSION

Through academic research and participant study, characteristics of synesthesia were identified, which made up the basis of the designs for the artefact. The artefact is a set of three sculptures, which artistically visualise and summarise the findings of this project.

A pipeline was established and successfully produced the sculptures. 3D printing demonstrated its ability to accurately produce intended results, provided that the user has an appropriate amount of digital sculpting and 3D printer knowledge. However, extra steps were required post-printing to make the sculptures look more realistic.

The final artefact is intended to be exhibited to promote recognition and interest in synesthesia.

REFERENCES

- Bompas & Parr, 2013. Heinz Beanz Flavour Experience. Bompas & Parr.
- Cytowic, R. E., 2003. The Man Who Tasted Shapes. 2. Cambridge, Massachusetts: MIT Press.
- Heinz Beanz, 2013. The Heinz Beanz Flavour Experience with Bompas & Parr [video, online]. YouTube.
- Terri Timely, 2009. Synesthesia [video, online]. Vimeo.