



Irving-Bell, D, McLain, M and Wooff, David (2019) Design Fiction a decade of reflection; The impact of teacher training on classroom practice. In: TENZ 2019, 1st - 3rd October 2019, Albany, Auckland, New Zealand.

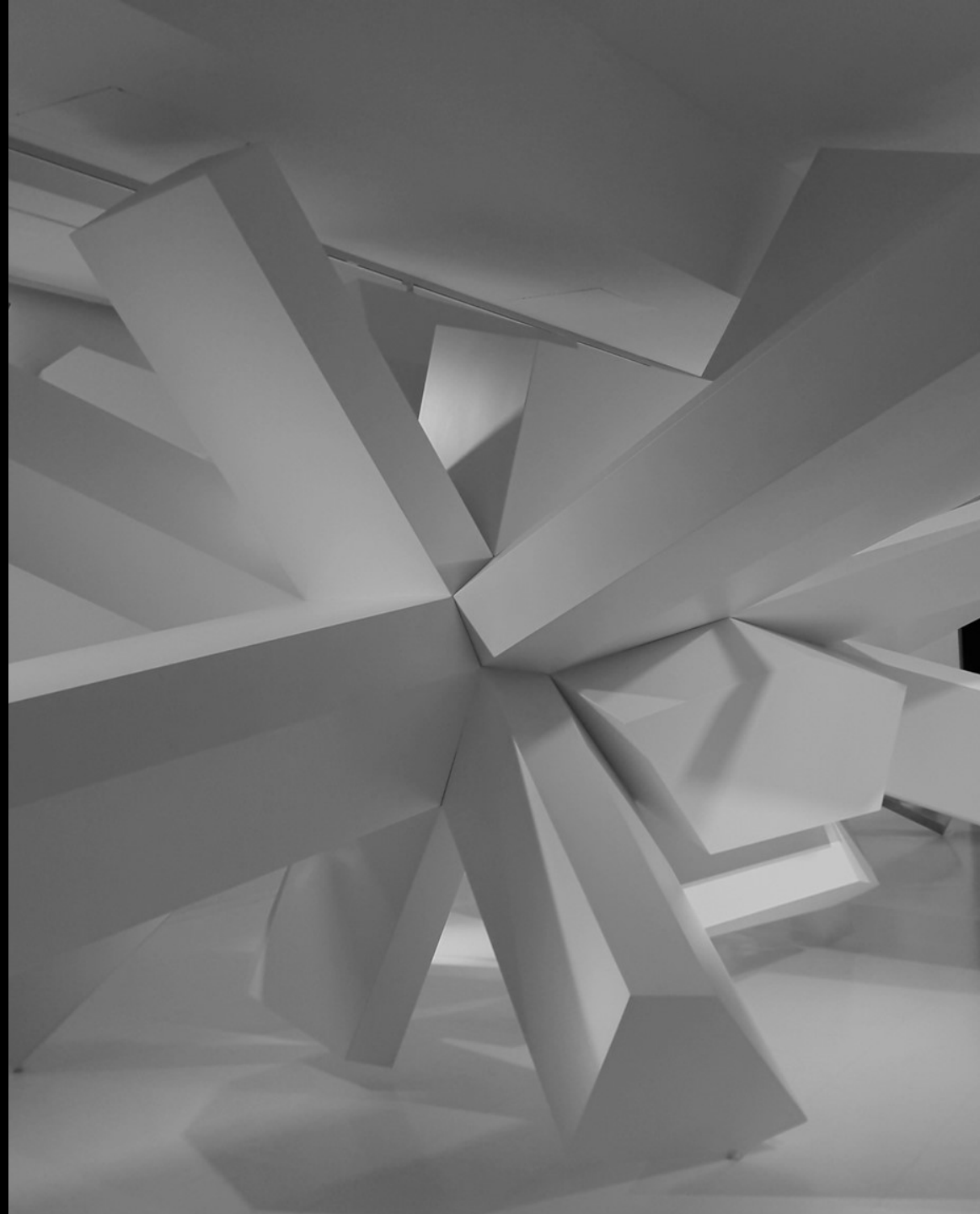
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**Design Fiction a decade of
reflection; *The impact of
teacher training on
classroom practice***

**Dr Dawne Irving-Bell,
Matt McLain and David Wooff**



Design Fiction a decade of reflection; *The impact of teacher training on classroom practice*

**Technology Education
New Zealand Conference,
Auckland**

1st -3rd October 2019

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This presentation has been designed to compliment the conference research paper.

It begins with a showcase of design and technology student teachers undergraduate work.

Then it moves to present student and pupil outcomes, examples of design fiction work completed under their tutelage of those ex-student teachers who are now fully qualified, many of whom have ten years of experience in the classroom.

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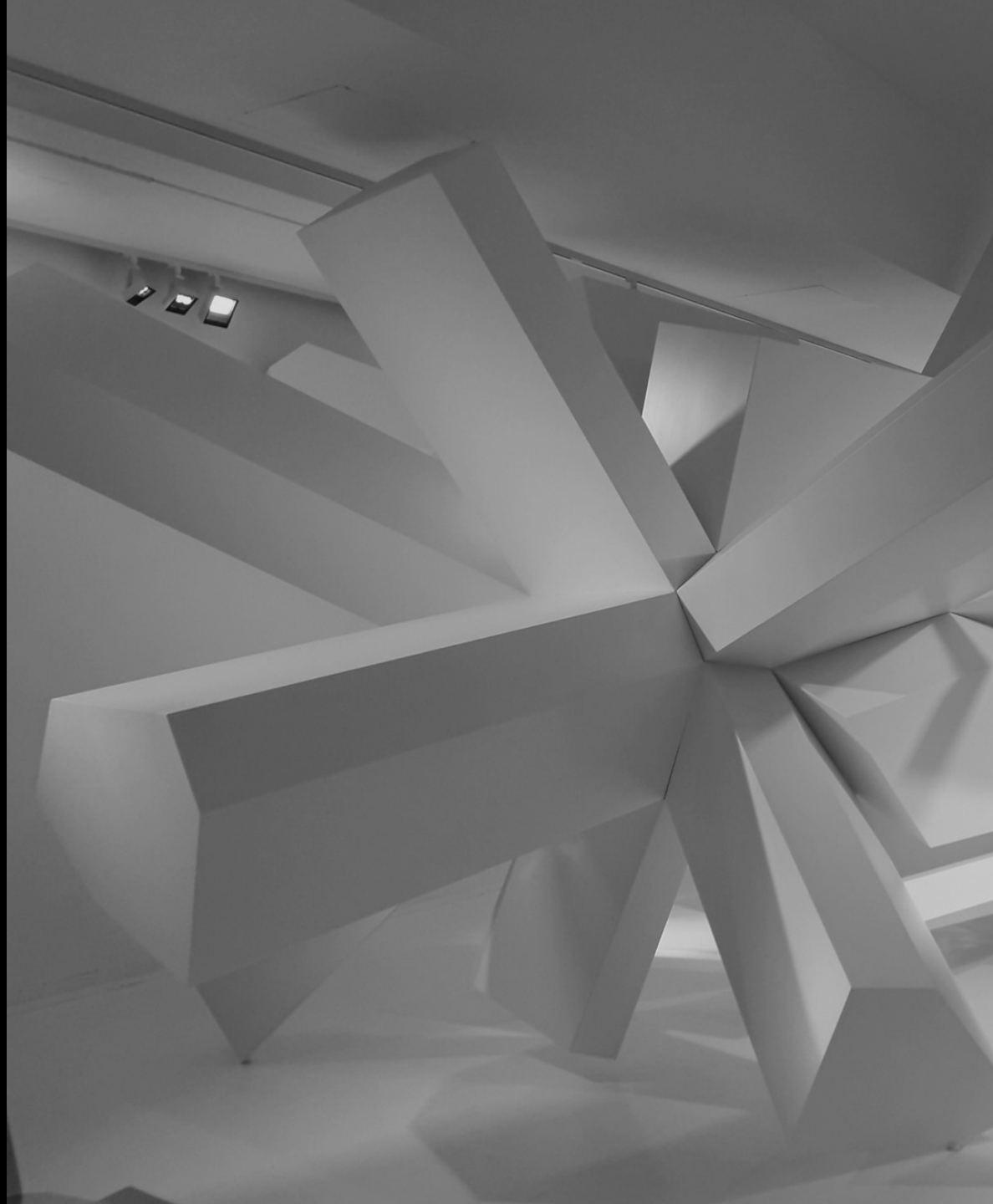
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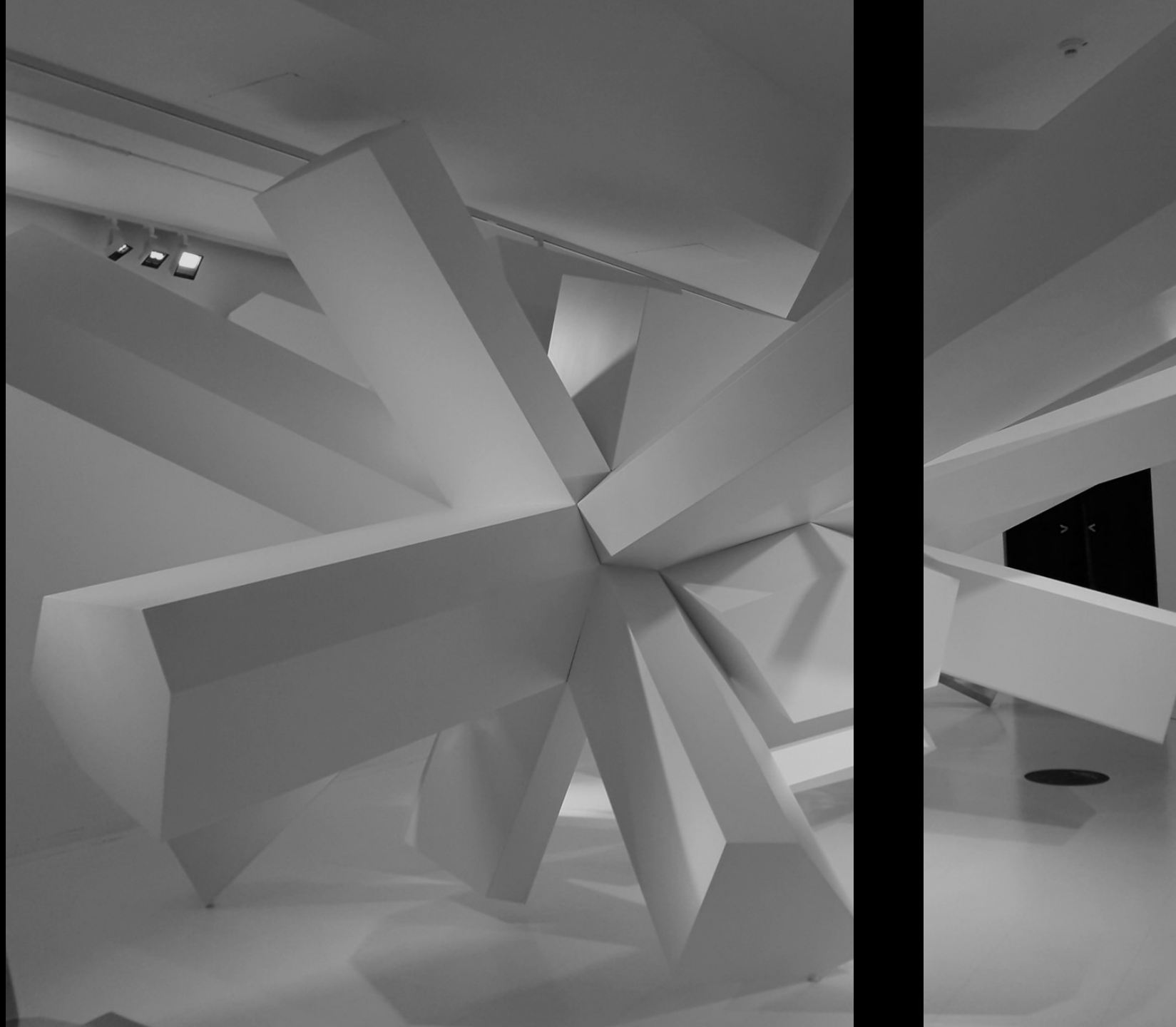
Before we begin it may be useful to provide a little context behind the presentation.

Inspired Sterling (2005), this presentation presents a collection of visual narratives from experienced design and technology teachers who were introduced to the notion of 'design fiction' while following their Undergraduate Design and Technology Initial Teacher Education (ITE) programme (in England).



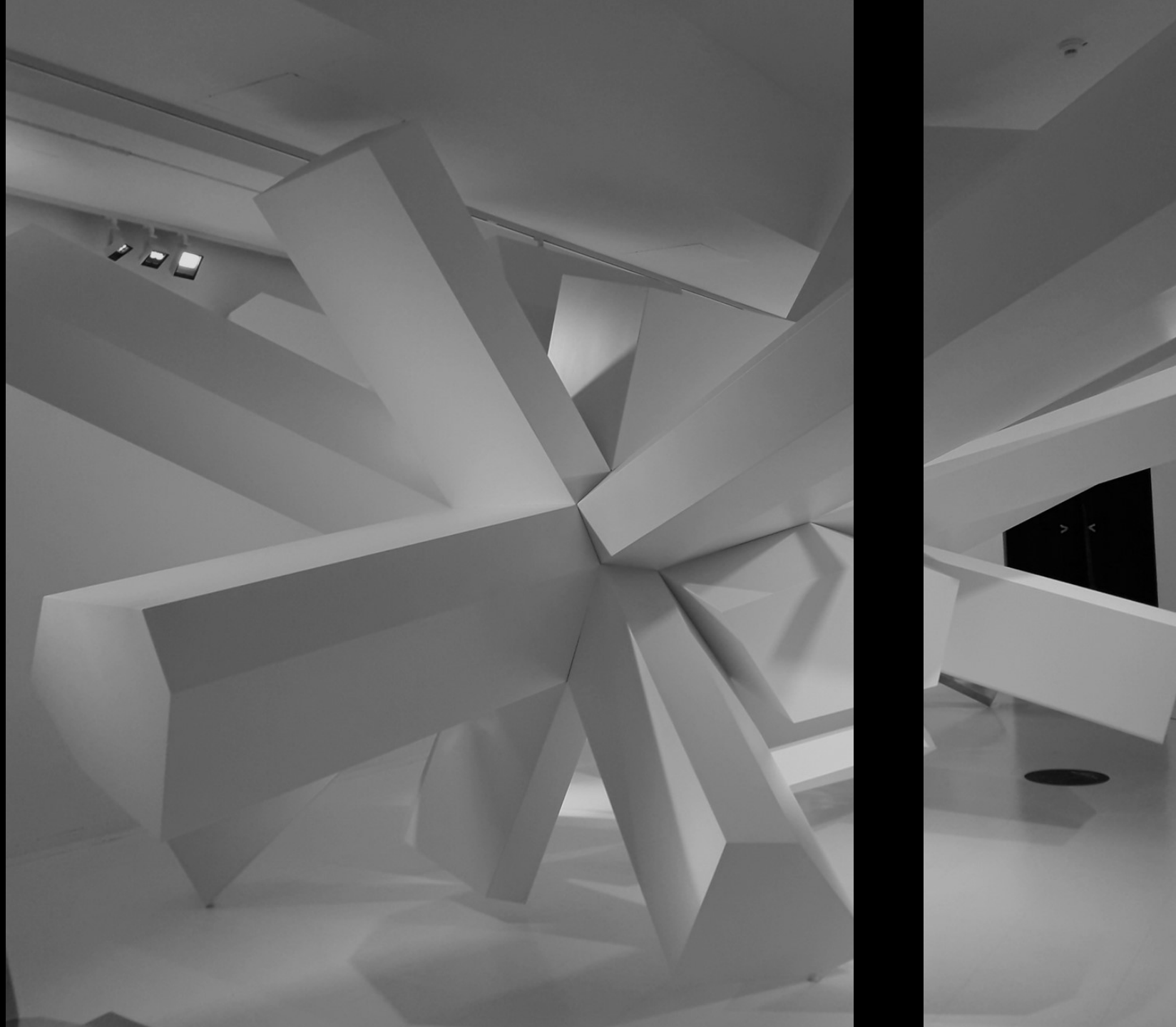
So, the aim was to use Design Fiction as a catalyst to effect innovative pedagogical approaches to the teaching of design and technology.

To support the student teachers to challenge their own thinking, to explore new and emerging technologies, and prepare to deliver this new content in a pedagogically innovative way.

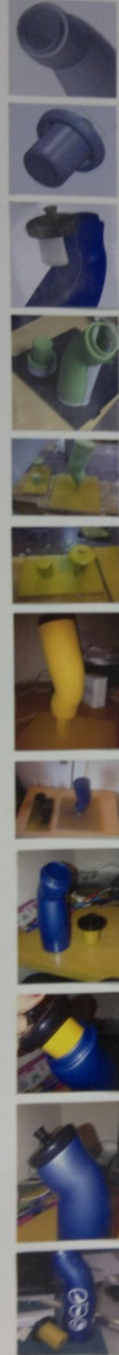


First this presentation will bring to the fore exemplar work created by the pre-service teachers themselves, who are now experienced teachers.

The presentation then shares examples of the participants pupils and students work, and in doing so demonstrates the impact that using design fiction as a catalyst for teaching has had on their own classroom practice.



In this next section we share examples of the participants work from when they were undergraduate design and technology students



S T3101 - Product Modelling
 K Kathryn Elliott
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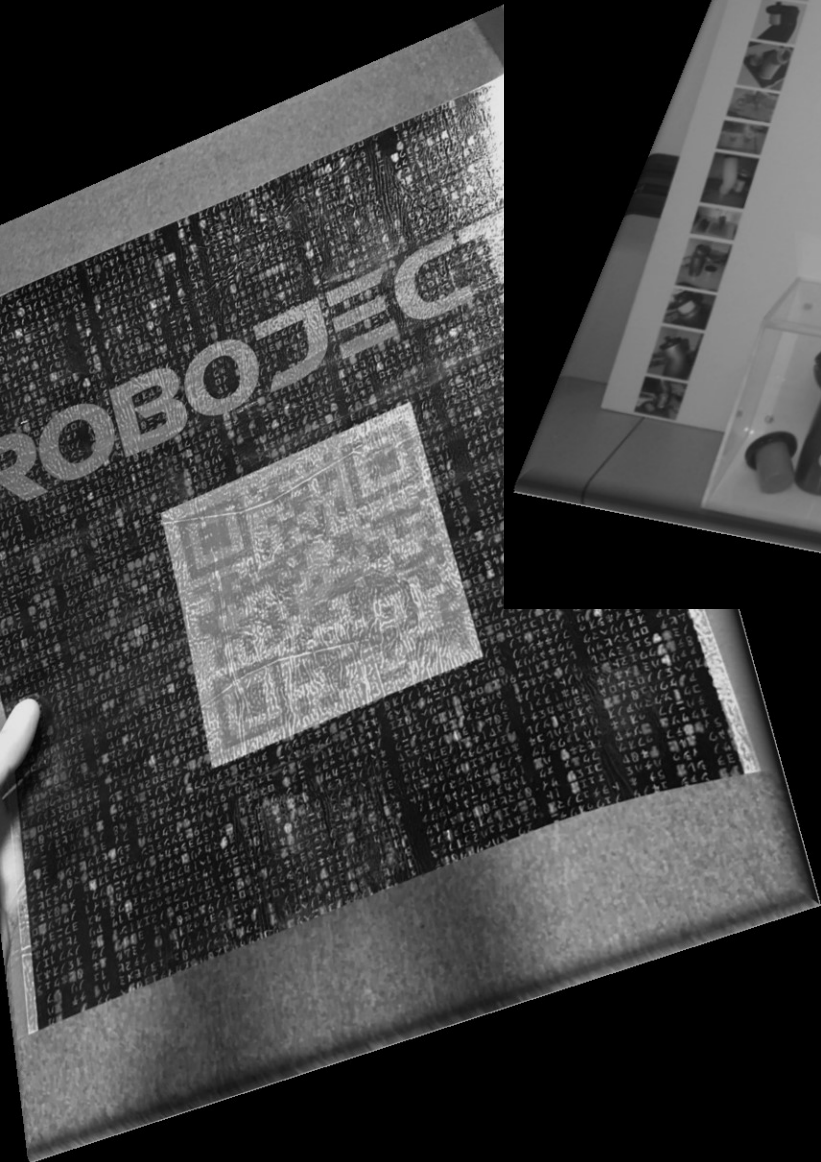


***“Design as a means of
speculating how things
could be”***

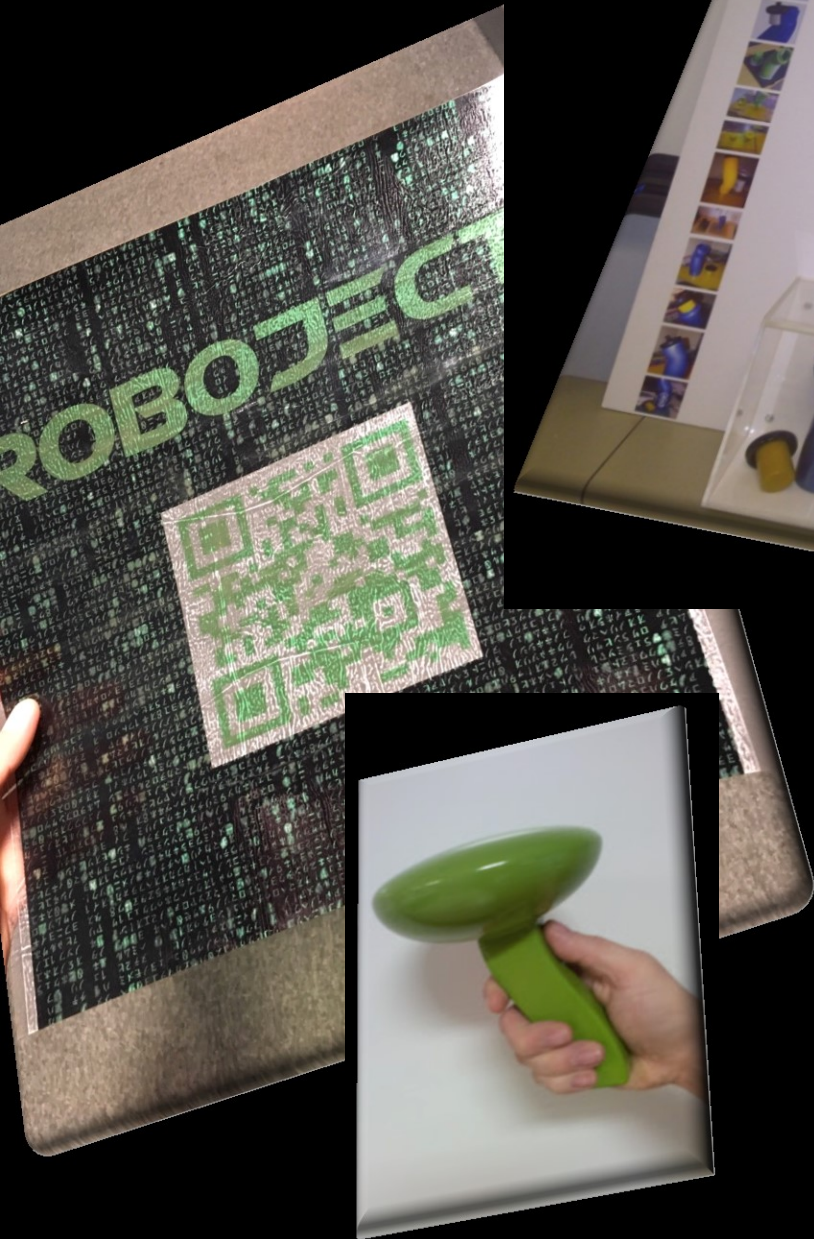
Dunne and Raby, 2013:2



**Examples of undergraduate design and technology
students work.**

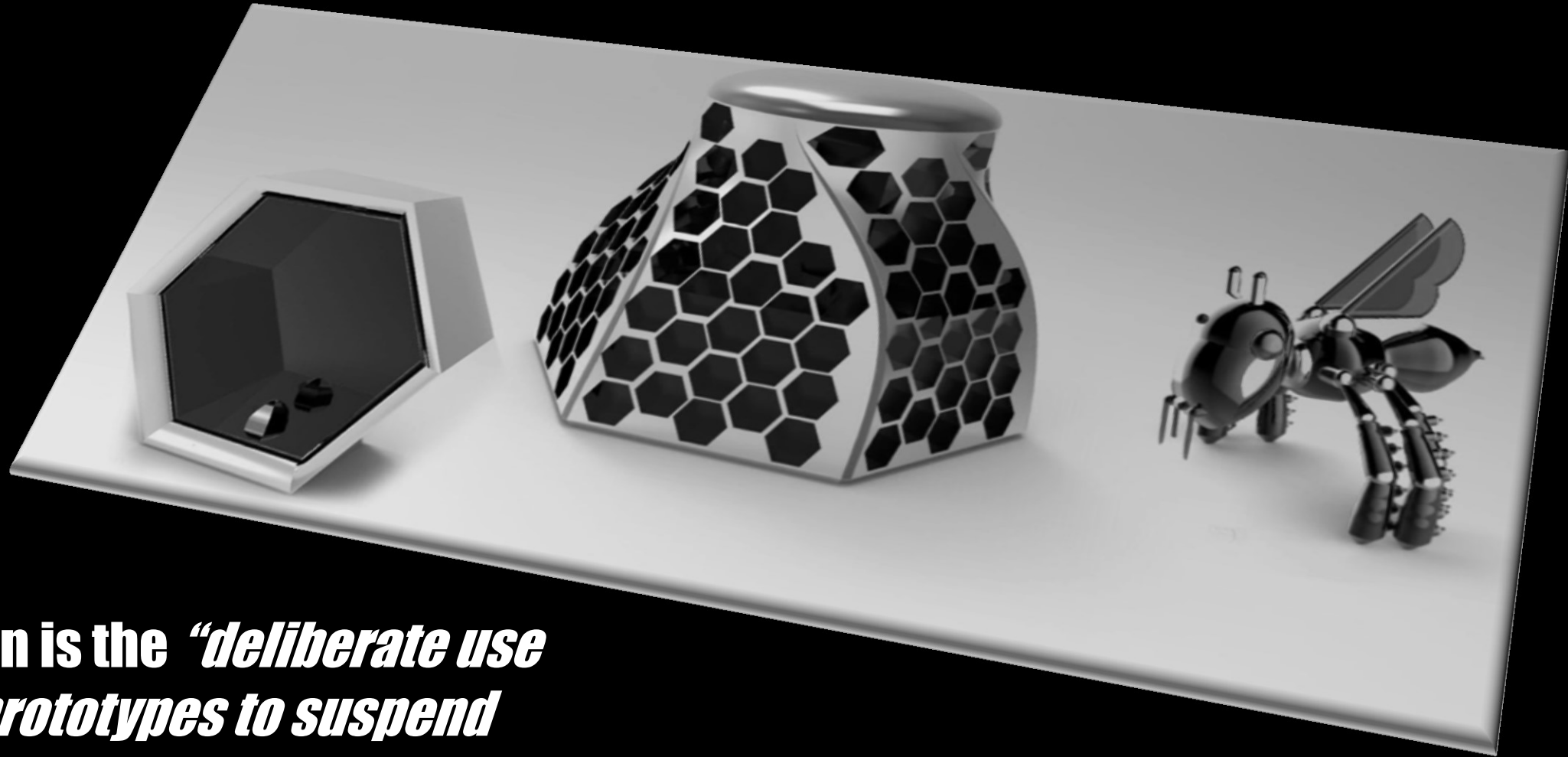


Examples of undergraduate design and technology students work.



Examples of undergraduate design and technology students work.

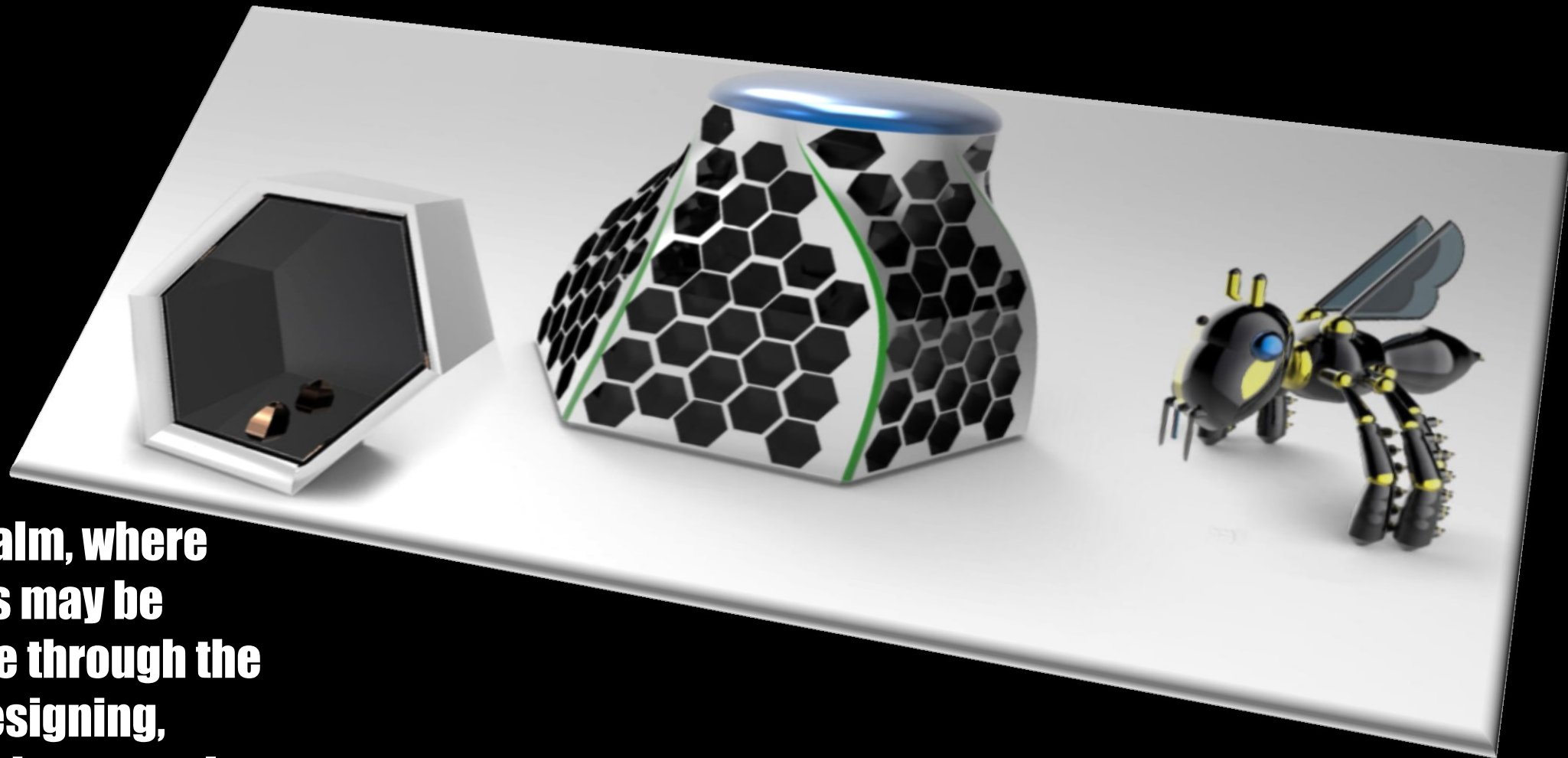
Using design fiction to Things



Design fiction is the “*deliberate use of diegetic prototypes to suspend disbelief about change*”

Sterling, 2012:1

Examples of undergraduate design and technology students work.

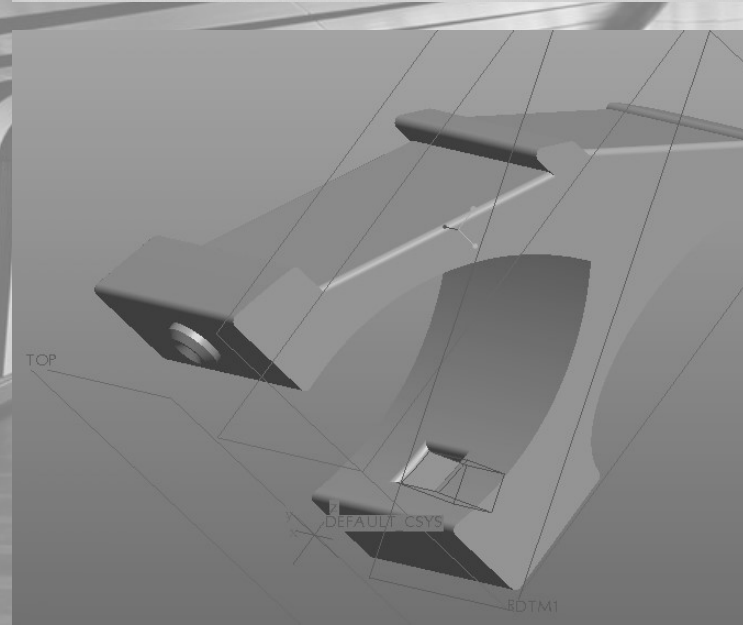
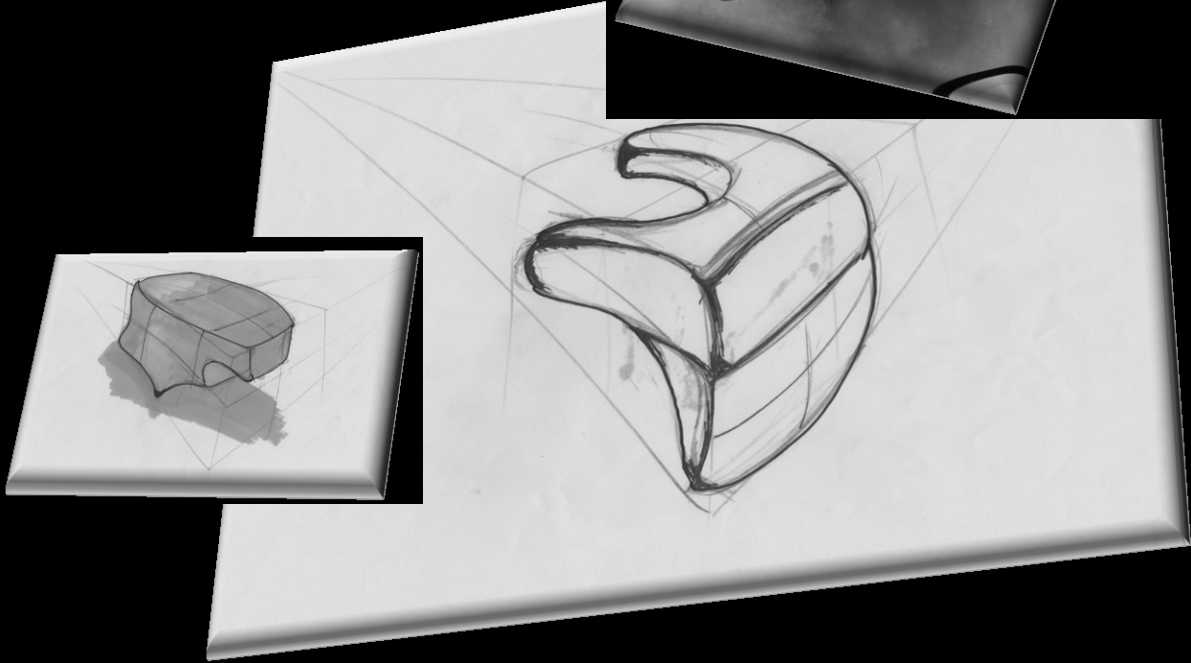
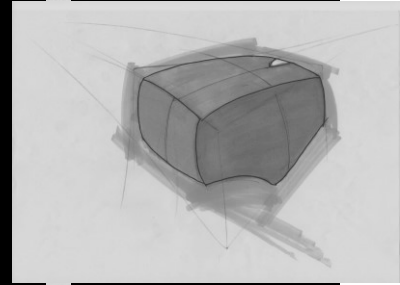
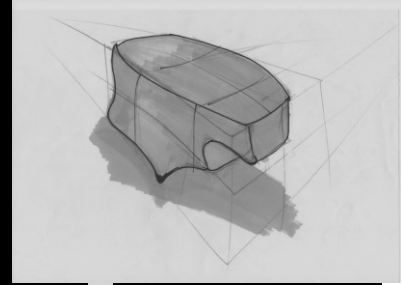
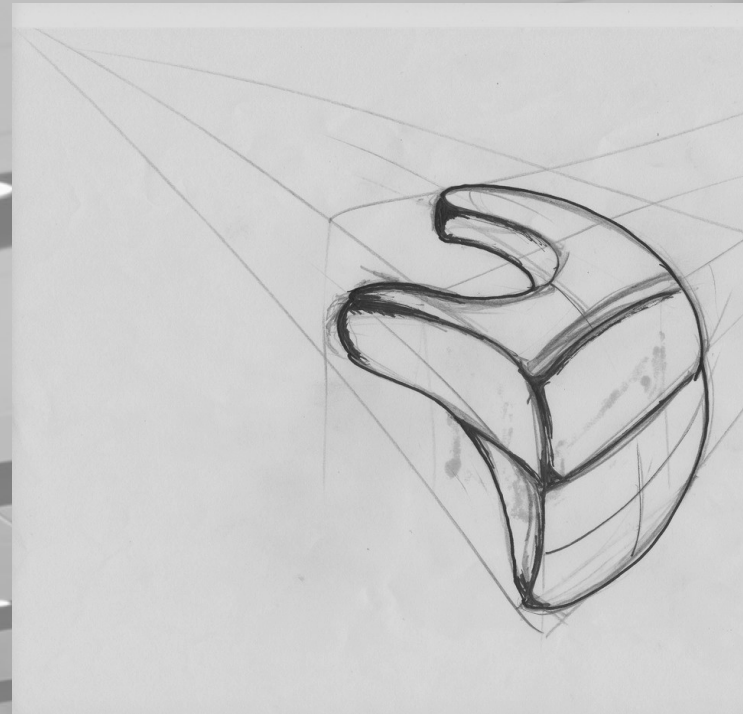
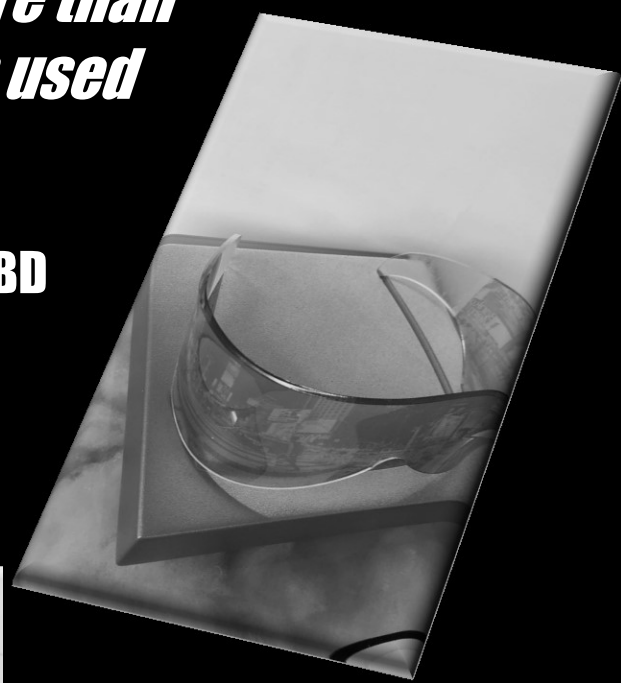


**A fictional realm, where
future visions may be
brought to life through the
process of designing,
modelling and prototyping.**

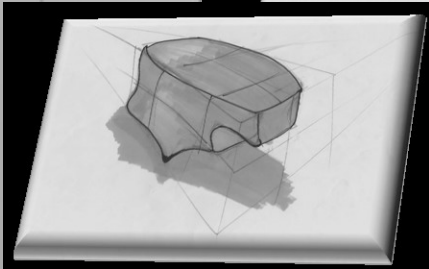
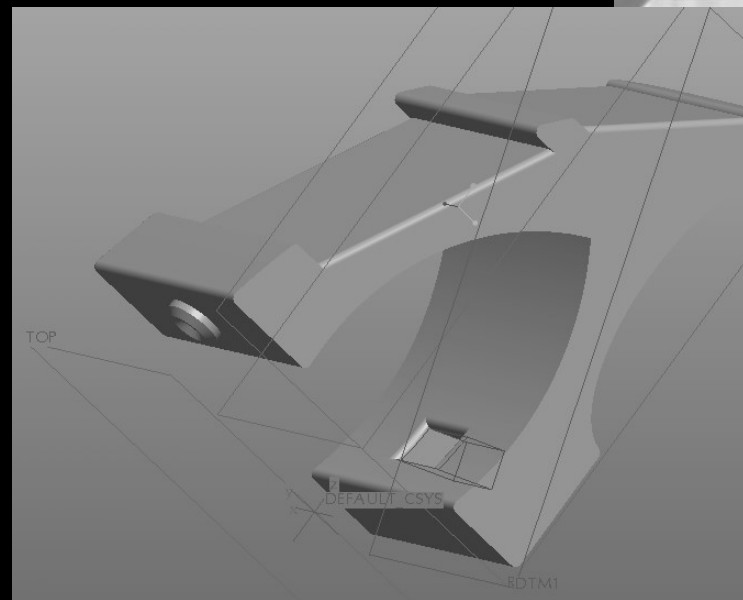
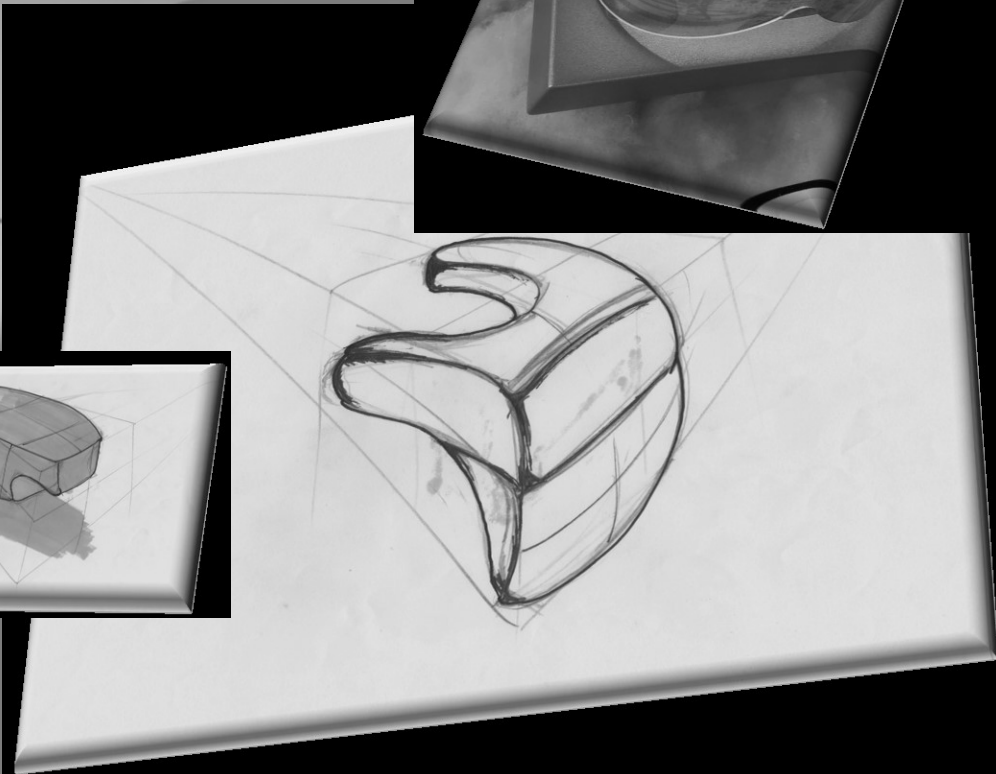
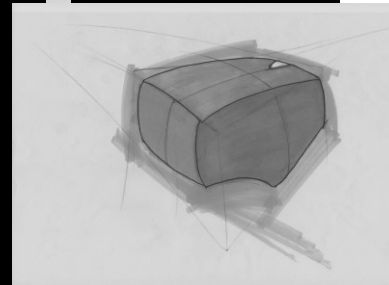
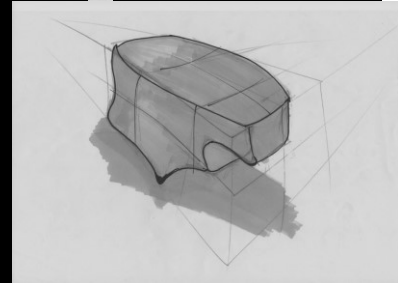
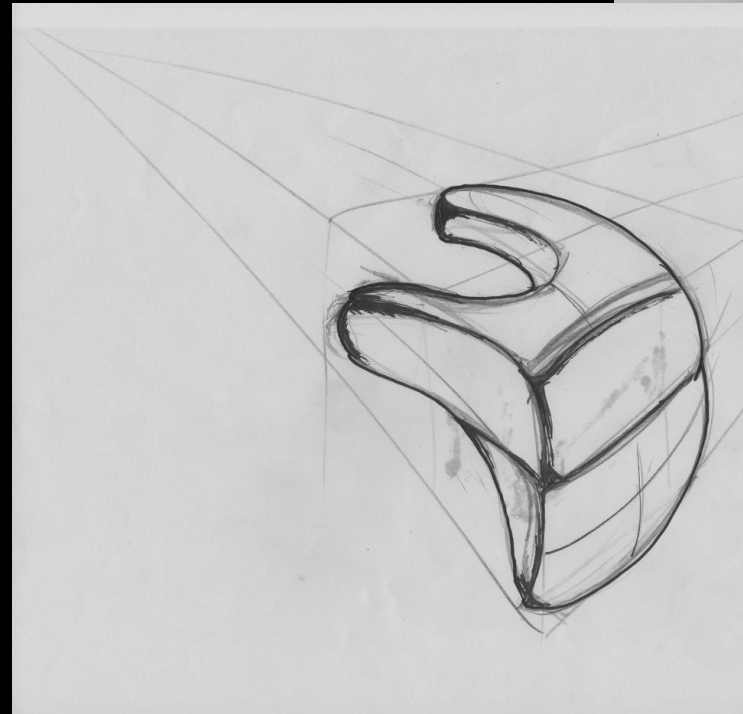
Lindley, 2018

...Design Fiction "portrays a different kind of future than you might have been used to"

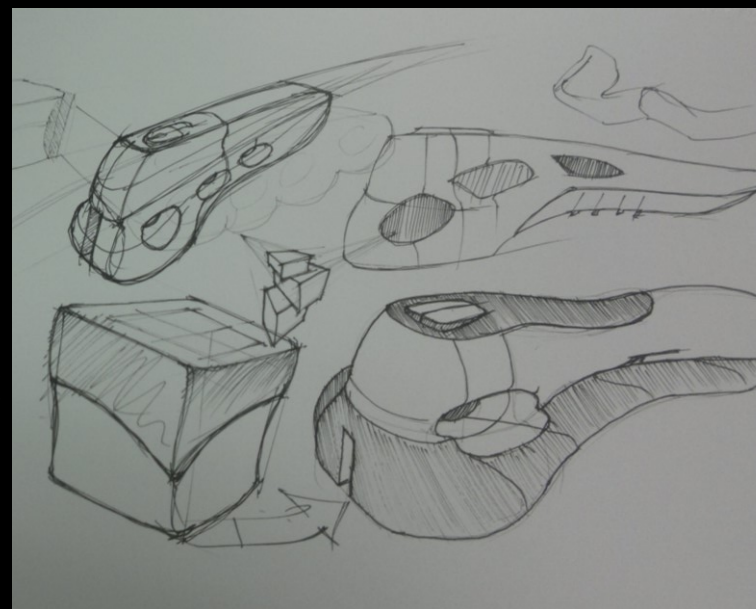
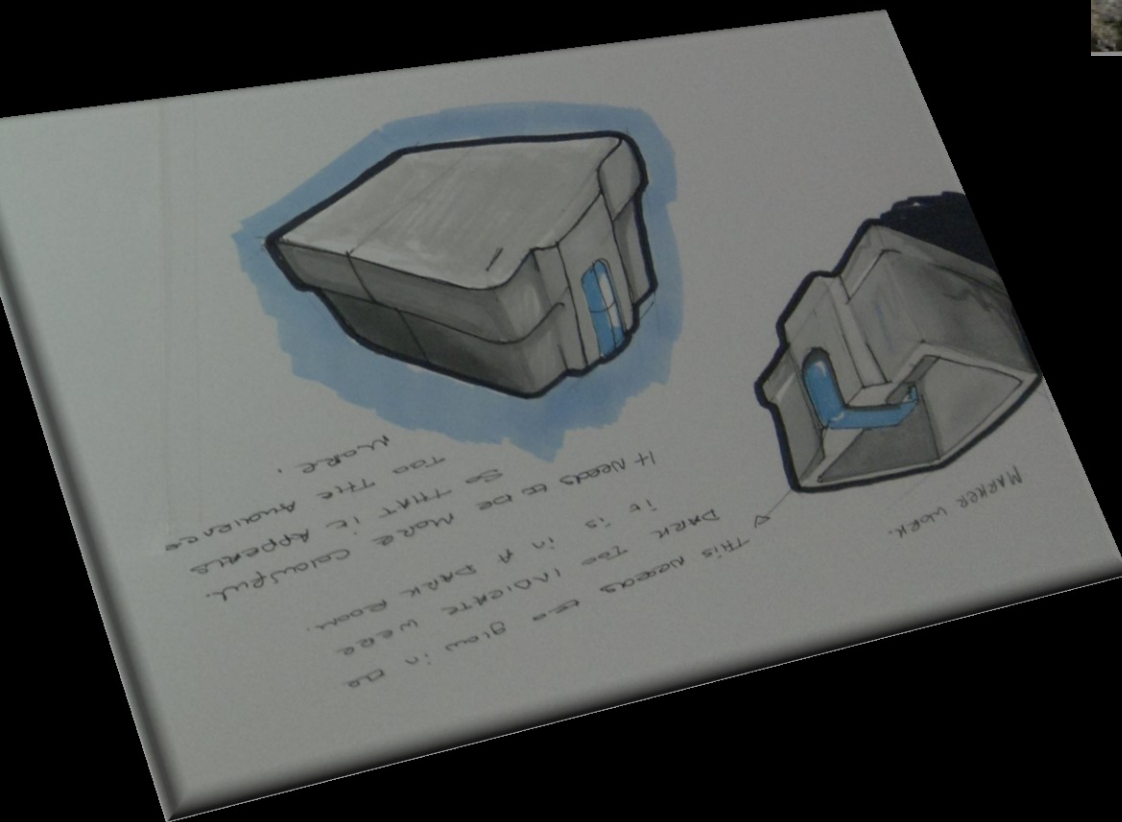
**Near Future Laboratory, TBD
Catalogue, 2019:1**



Examples of undergraduate design and technology students work.



Examples of undergraduate design and technology students work.



Students (the pre-service design and technology teachers) were encouraged to read around the literature, engaged with 'sci-fi film, and consider the notion as a catalyst to stimulate innovative design for themselves, as well as to use with the children they were training to teach.

IDEAS

Yin Yang
The sign used for the word 'interpreter' is very similar to the Yin Yang symbol. The fact that the sign is mirrored and at opposite polarity seemed to fit in well with both the logo and a design for two interlocking handsets.

Buttons
Two control buttons to scroll up and down through menus and options

High gloss finish
Black and white

Microphone
To detect voice and language

Screens
LCD colour screens

USB Connection
Download new languages and updates from www.interpreter-co.uk

Speaker/Audio system
Clear audio with male or female voice options

The interpreter comes with 12 pre installed languages. The USB cable allows you to connect your PC to download new languages from the website. With over 100 languages to choose from, you can select language, destination popularity.

ERGONOMICS

STYROFOAM MODEL

By using Styrofoam to make a mock up, it allowed me to experiment with the ergonomics of the product. Styrofoam can be shaped quickly and easily with hand tools and glass paper to bast suit grip. After shaping the styrofoam, I felt that the finger grips didn't make that much difference to the ergonomics of the product. They took away from the sleek yin yang effect so I did not include them on my final design.

The interpreter designed to be held in one hand using the other hand to press buttons. The position of the microphone and speaker system have been strategically placed so as one not cover what the hand is in use.

Google Sketch images

Left handed Interpreter

The illustration to the left shows the interpreter held in the left hand. Even though the product appears to mould ergonomically around the hand, when the interpreter is held in this way in real life it is uncomfortable and difficult to grasp. The ergonomics of the product made me consider the idea of both left and right handed interpreters

PACKAGING

The packaging for the interpreter is simple and sleek. It is made from thick white card that has been backed with black and orange vinyl. The walls of the box have been lined with foam board to make them rigid. The foam board also acts as a locator for the lid. Contrasting vinyl stickers have been added to display product and packaging information.

CAD Images produced on Google Sketchup

Orange Vinyl

Black Vinyl

Package Information

Base	180mm	140mm	30mm
Lid	180mm	140mm	30mm

British Standards Kitemark

CE European Standards Certification Mark

Barcode

Vac formed tray inside the package to hold product and USB cable



**Design fiction as social dreaming.
Designers shouldn't just look to
address the issues of today but
must also look into the future.**

Dunne and Raby, 2013



INCREASING STUDENT ENGAGEMENT AND ATTAINMENT THROUGH THE IMPLEMENTATION OF TECHNOLOGY ENHANCED LEARNING



Dawne Bell and David Wooff, Edge Hill University

Technology Enhanced Learning (TEL) has emerged to be one of the latest 'buzz' words, but within design and technology does 'TEL' really have any significant impact upon improving students learning and subsequently their attainment?

This article seeks to share aspects of some of the work recently undertaken by undergraduate trainee teachers from Edge Hill University during their professional teaching placements. The work originates from the utilisation of new learning technologies in an undergraduate module, which sought to improve their student learning experience and improve academic attainment.

The module, which used the notion of 'design fiction' as a catalyst for work, was designed to encourage trainees, on the Design and Technology BSc undergraduate course to use TEL in the production of a futuristic concept design product. The module delivery was developed to 'echo' the content, and through the introduction of innovative and creative approaches trainees were encouraged to capture their progress using TEL.

Previously this module promoted the use and production of a traditional paper based design portfolio and three-dimensional concept solid block model. The TEL strategies and approaches were introduced in addition to the traditional modes of study already in existence and at no time were trainees under any obligation to engage in TEL and were able to select learning and teaching strategies wholly dependent upon their own personal preference.



For those trainees who expressed a desire to engage with the TEL initiative the new approaches included the enhanced use of the virtual learning environment, the use of blogs as an alternative to the production of a traditional paper based design folio, with supplemental work engaging trainees in the generation and utilisation of QR Codes to communicate their visual communication design decisions and concepts to others.

Following completion of the module a number of the trainees then proceeded to adopt aspects of their work and integrated some of the TEL approaches whilst on their teaching placements, to enhance the delivery of lessons, increase the engagement of students and improve levels of attainment. Teaching placements were undertaken predominantly within mainstream secondary school learning environments across the North West of England.

**The purpose was to support
the pre-service teachers to
challenge their own
conceptions of the subject.**

**EXPLORING**

AUGMENTED REALITY

Dawne Bell and Rob Jones, Edge Hill University

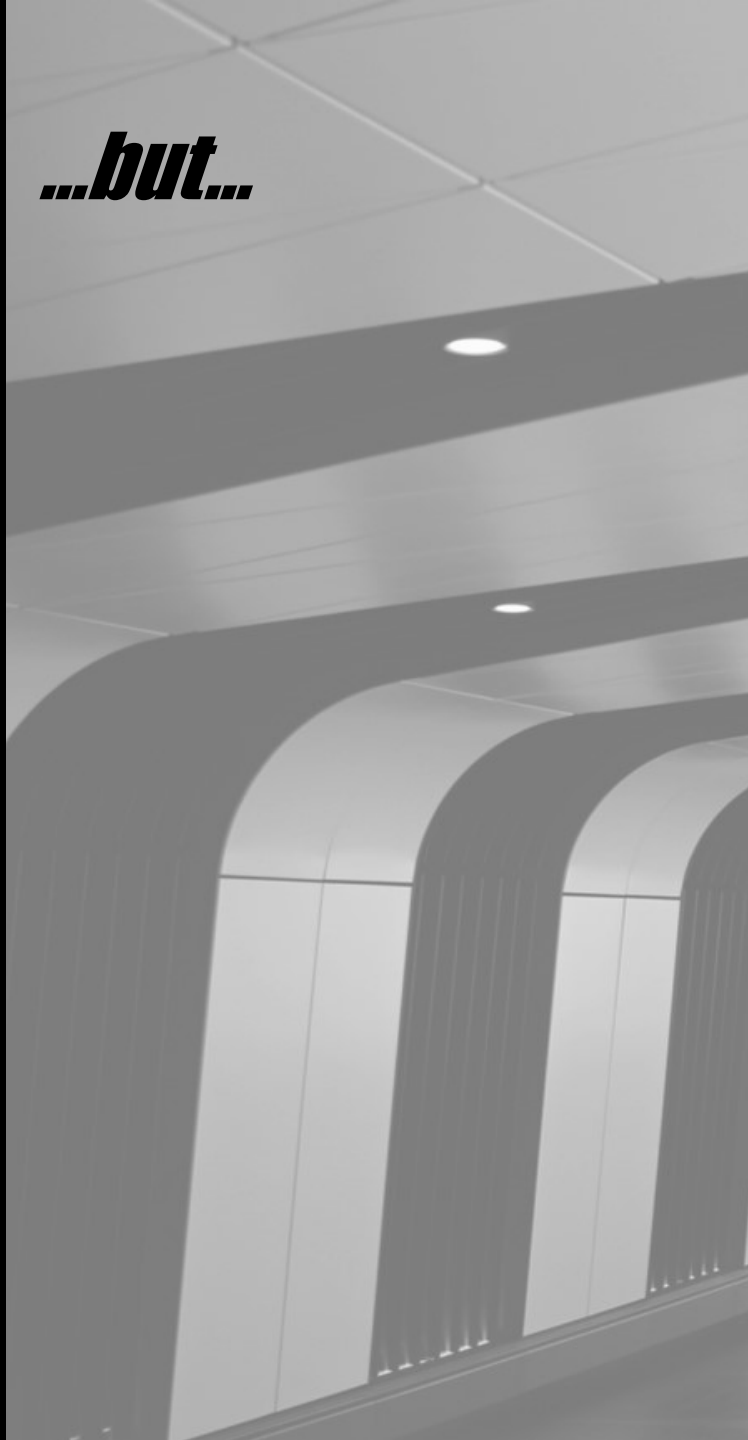


In September's edition of D&T Practice (Issue 3.2012) David Wooff and I wrote about how staff were working with trainees on the Design and Technology BSc Initial Teacher Training course, using the notion of 'Design Fiction' as a catalyst for their design work, to explore the effective employment of Technology Enhanced Learning (TEL) such as the use of QR Codes, Prezi and Blogs. The outcomes had a series of positive impacts, not only on the trainee teacher's attainment, motivation and engagement but where trainees had engaged in aspects of the TEL whilst on their teaching placements in schools the impact upon the student's attainment and progress.

Within a framework of support to push themselves out of their comfort zones and move beyond their own pre-conceived ideas of how design could or should be taught.

Outcomes were disseminated

...but...





...but...

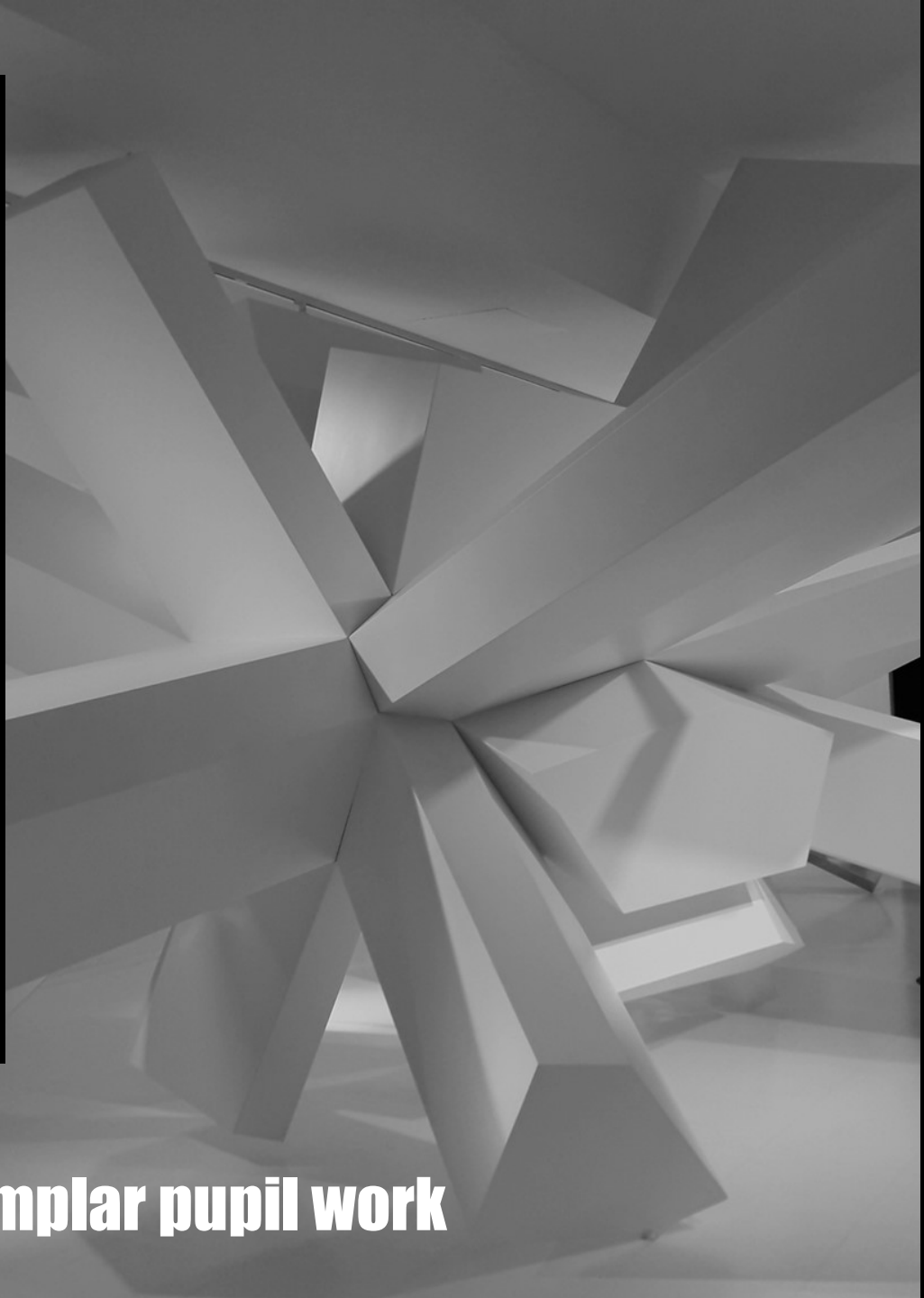
...what impact has the introduction of 'design fiction' had upon the classroom practice of design and technology teachers?

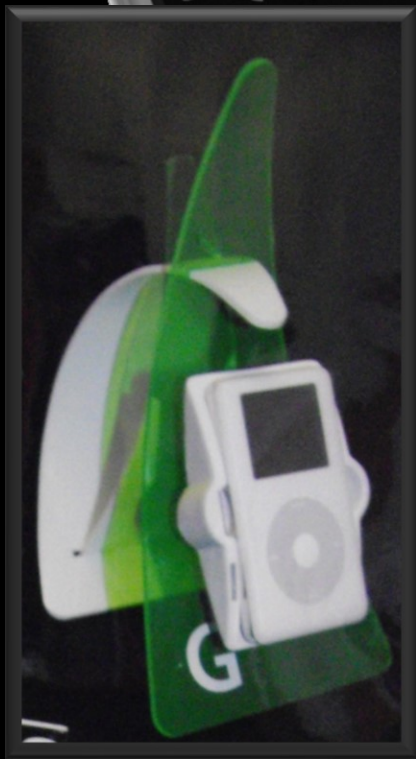
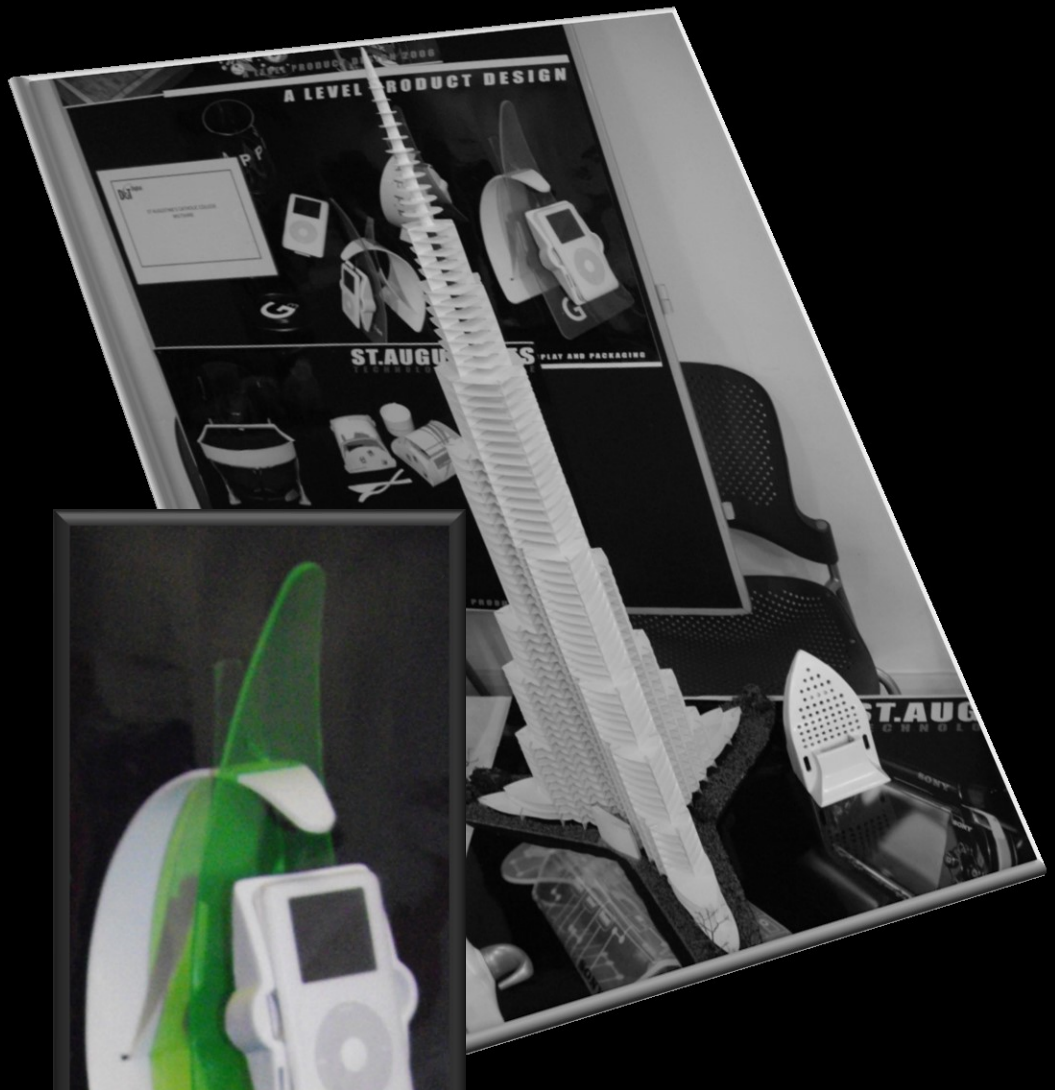


In this next section of our presentation we showcase a selection of pupil and student work completed under the tutelage of those students (the pre-service teachers) who studied the module all of those years ago ...

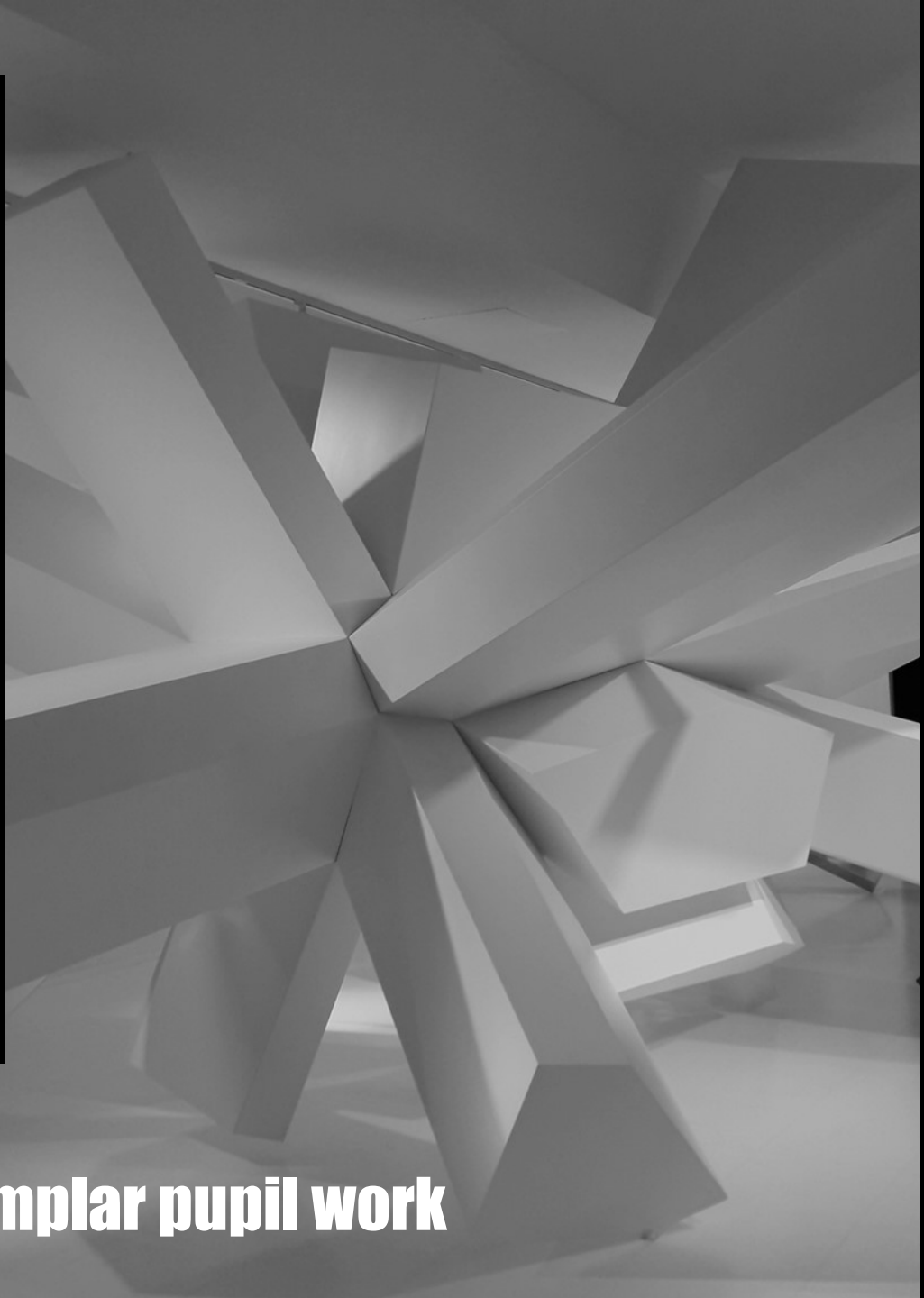


Exemplar pupil work





Exemplar pupil work





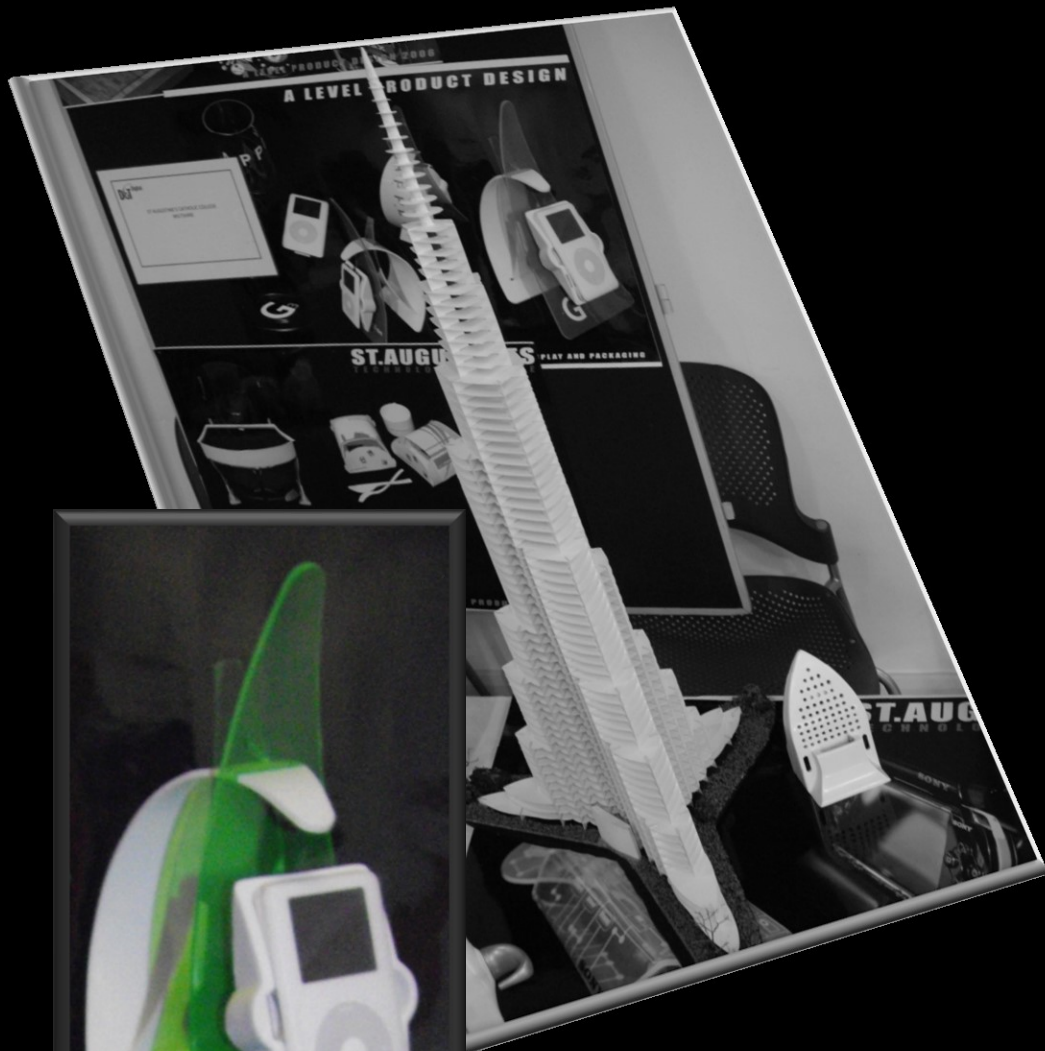
Exemplar pupil work



Exemplar pupil work



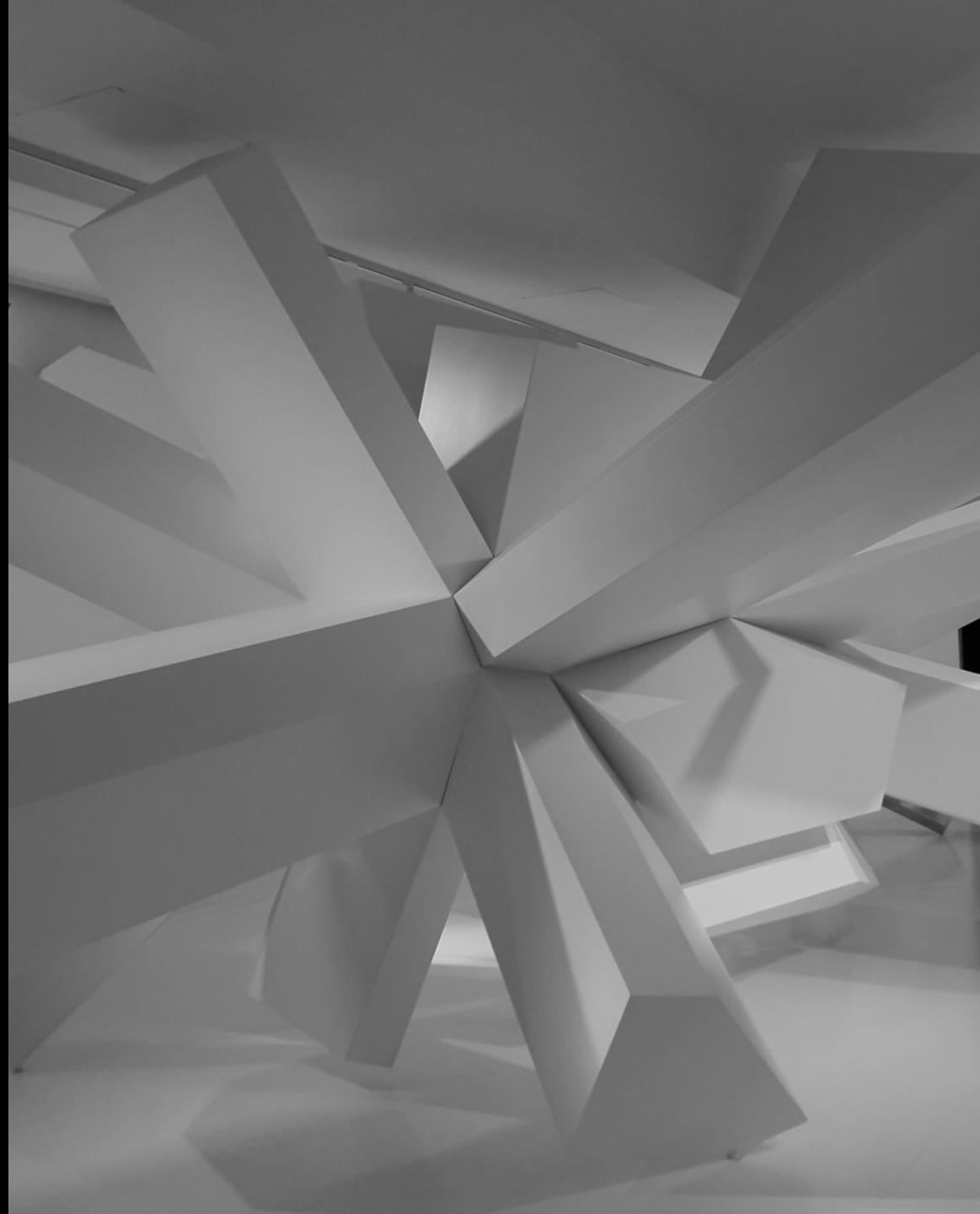
Exemplar pupil work



Exemplar pupil work



Encouraging children from an early age to speculate, and use the notion of design fiction to help create a futuristic solution to solve a fictional design problem.



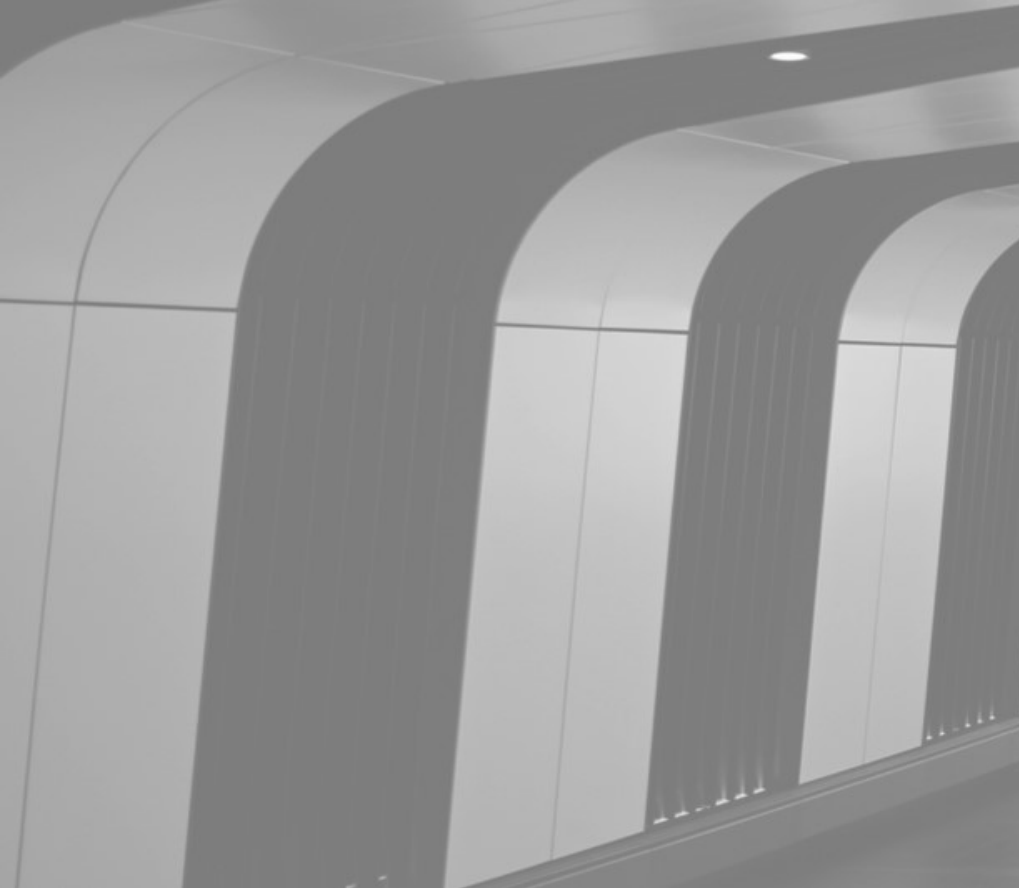


The notion of what might be rather than what is.

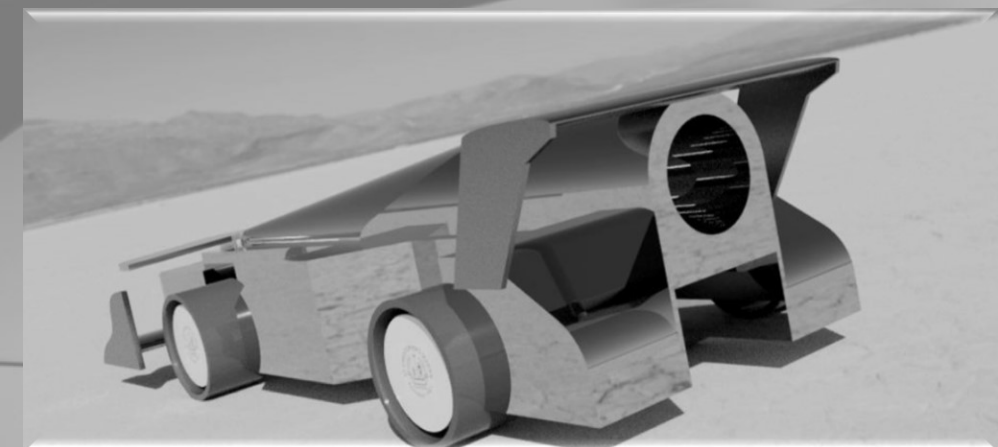
The use of fantasy as a positive to support young children to engage in creative, designedly activity was advocated by Stables (1992).

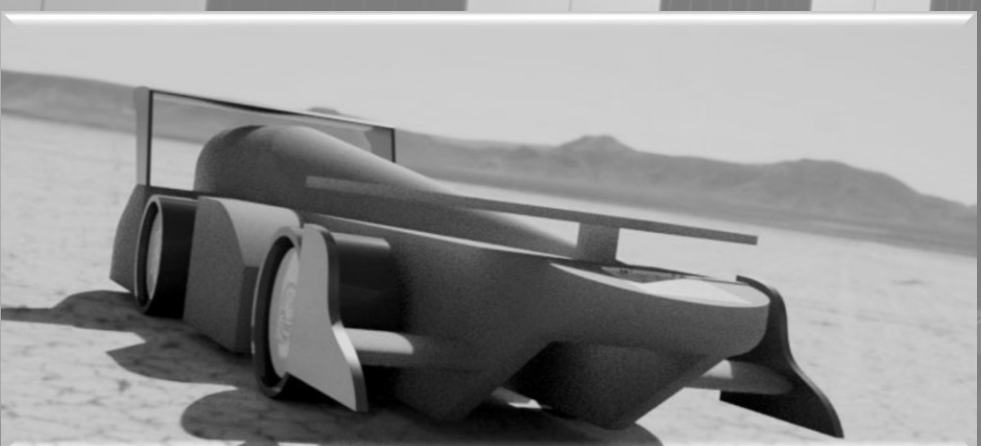
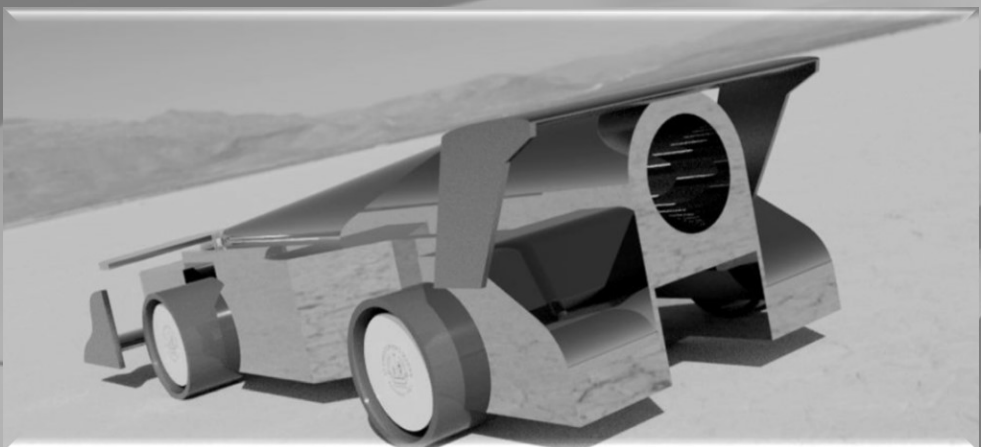


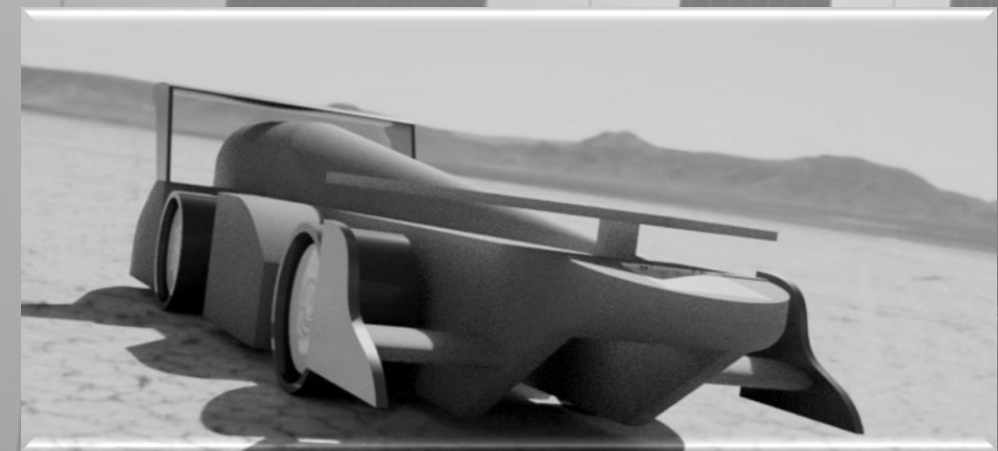
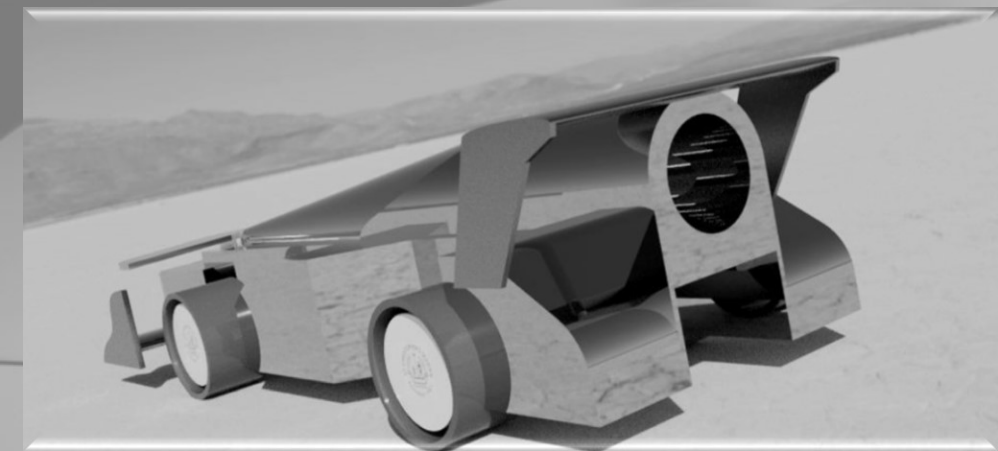
As these examples illustrate design developments may include the use of computer modelling and simulation.



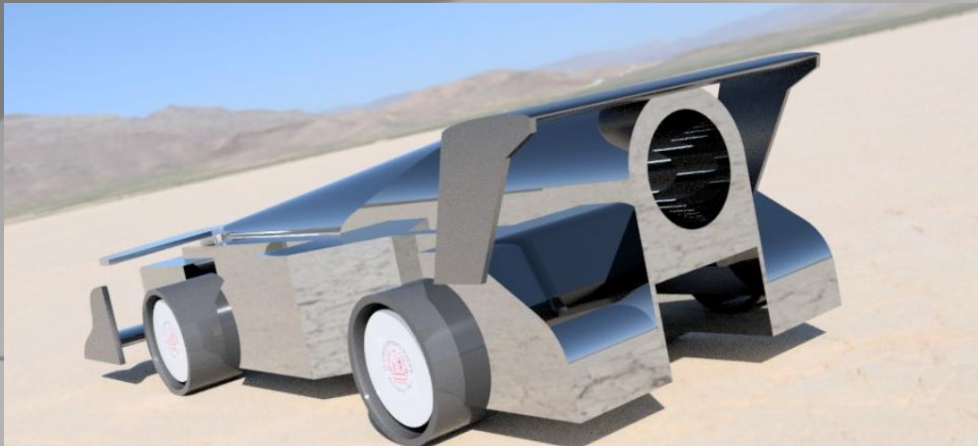
**Design developments
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Where a prototype models have been created the focus has been to support pupils to develop skills; cutting, shaping and forming, in the realisation of a really high-quality finish.



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Using the notion of design fiction to teach children about new and emerging technologies.

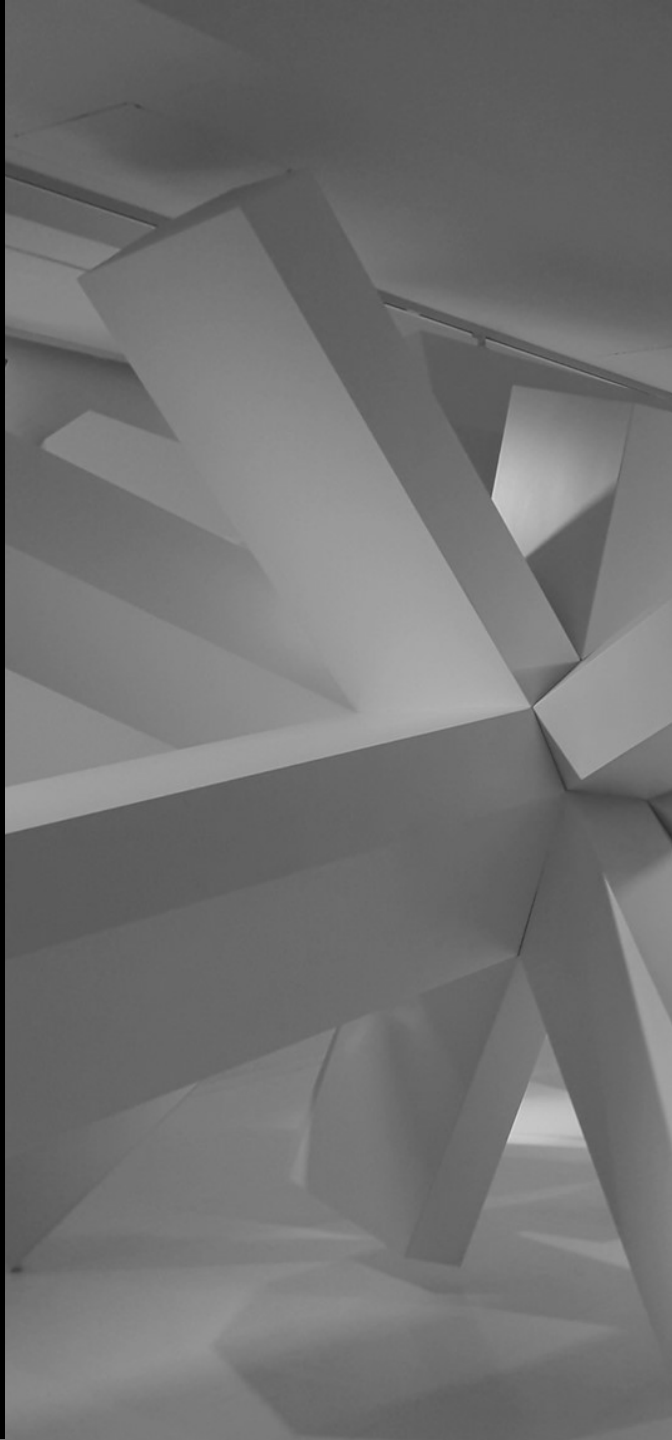


**Focusing on some big themes
such as sustainability,
transport, the environment,
communication...**



**and
the innovation application of new materials**



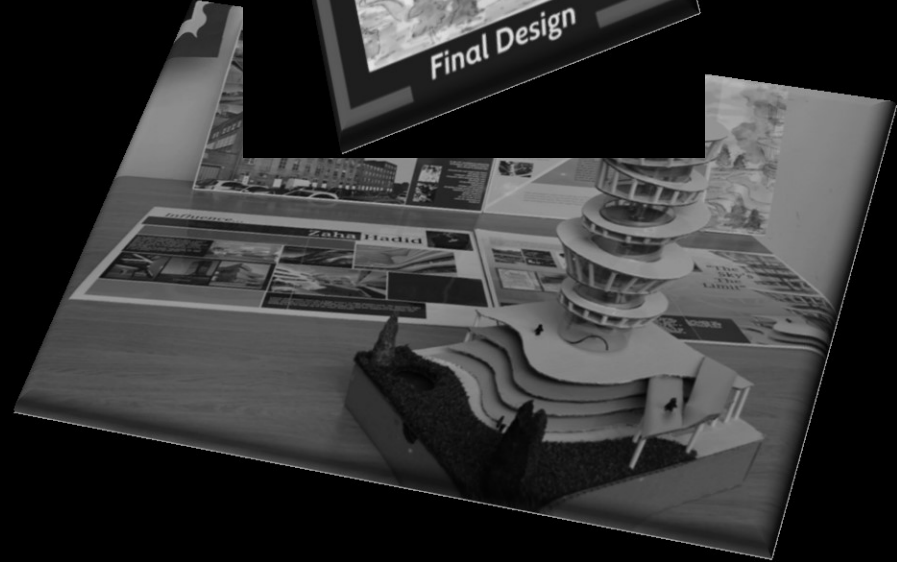
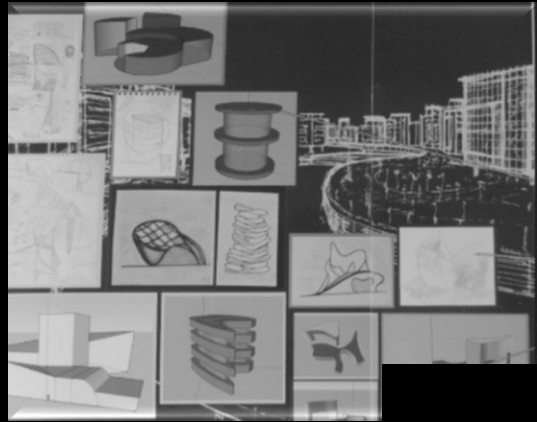
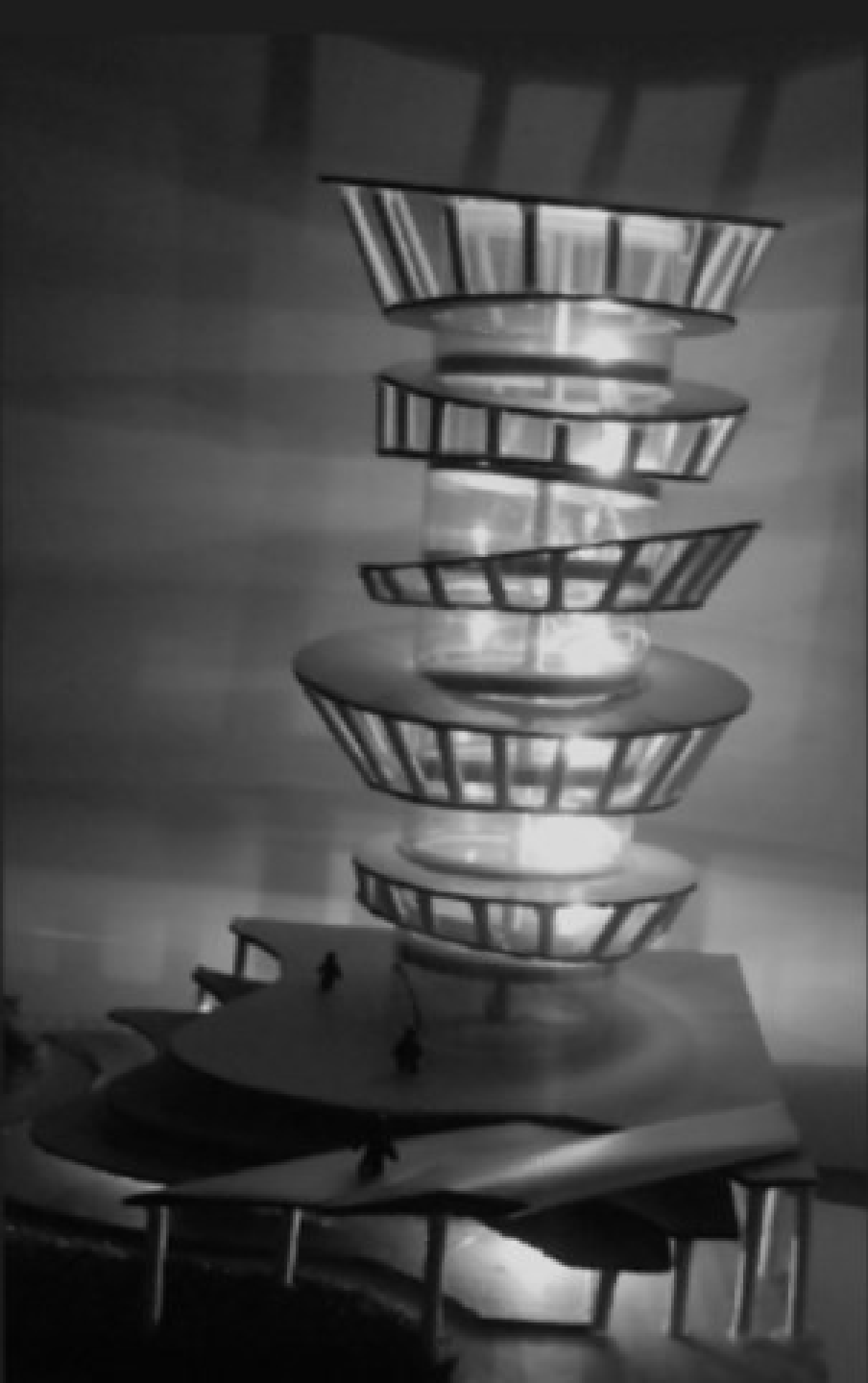


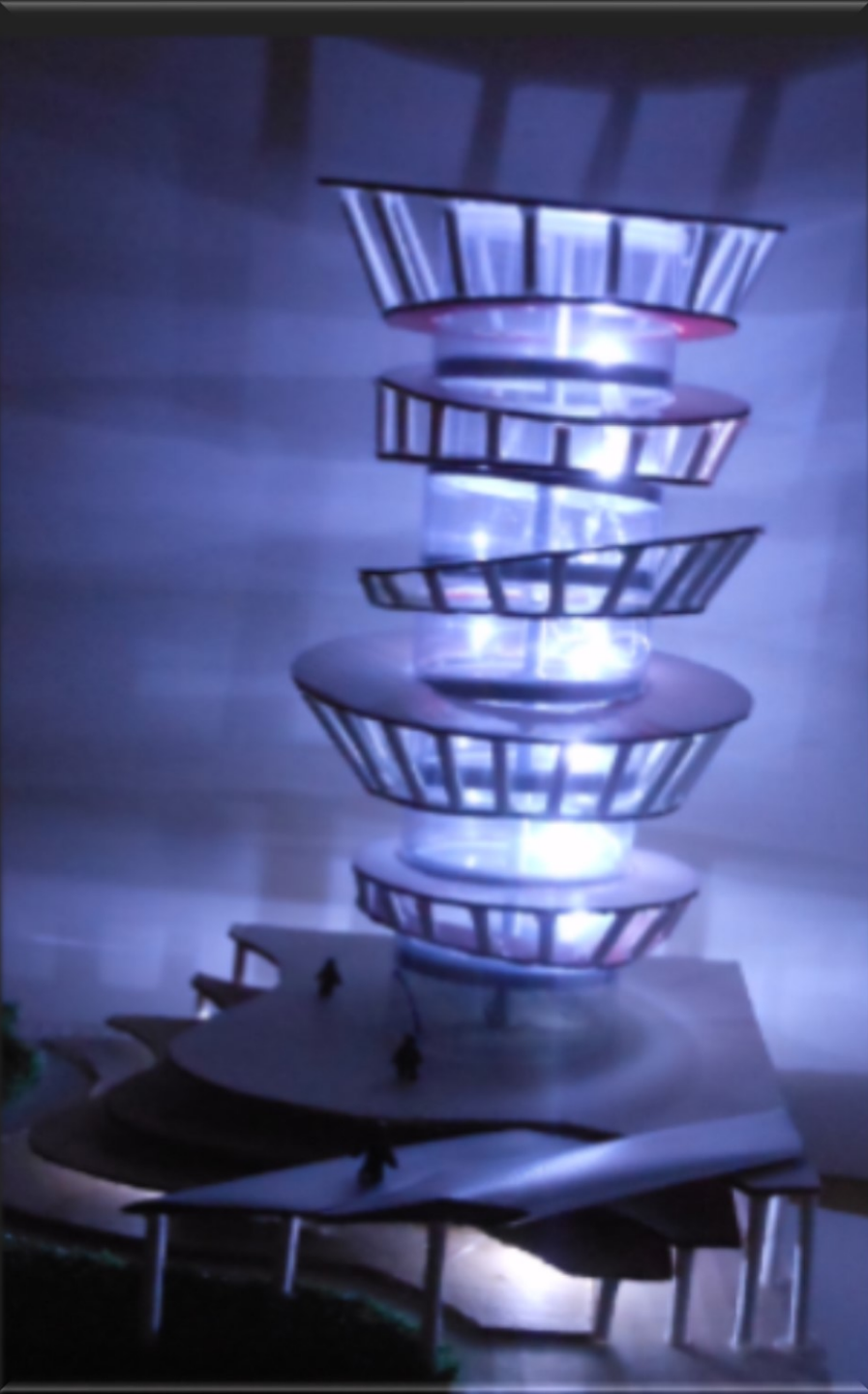
Facilitating an environment where

“children don’t have to make a fully functioning working product so they have more time to focus on the development of other key skills”



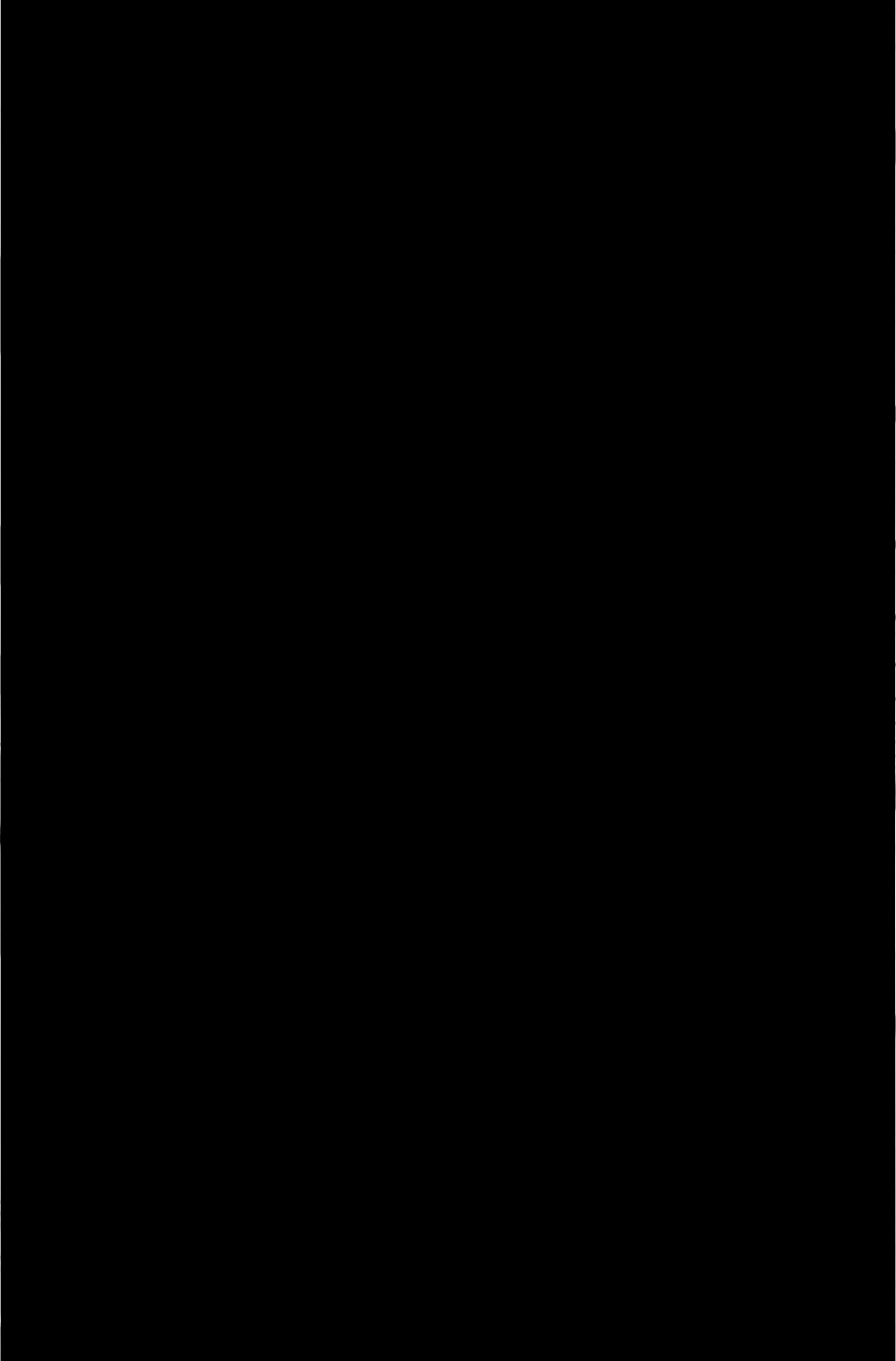
Adam Hall, Maria Antazo, and Emmanuel Moro





Advantages cited by students (the pre-service teachers) included an increase in student motivation to engage in designedly activity.





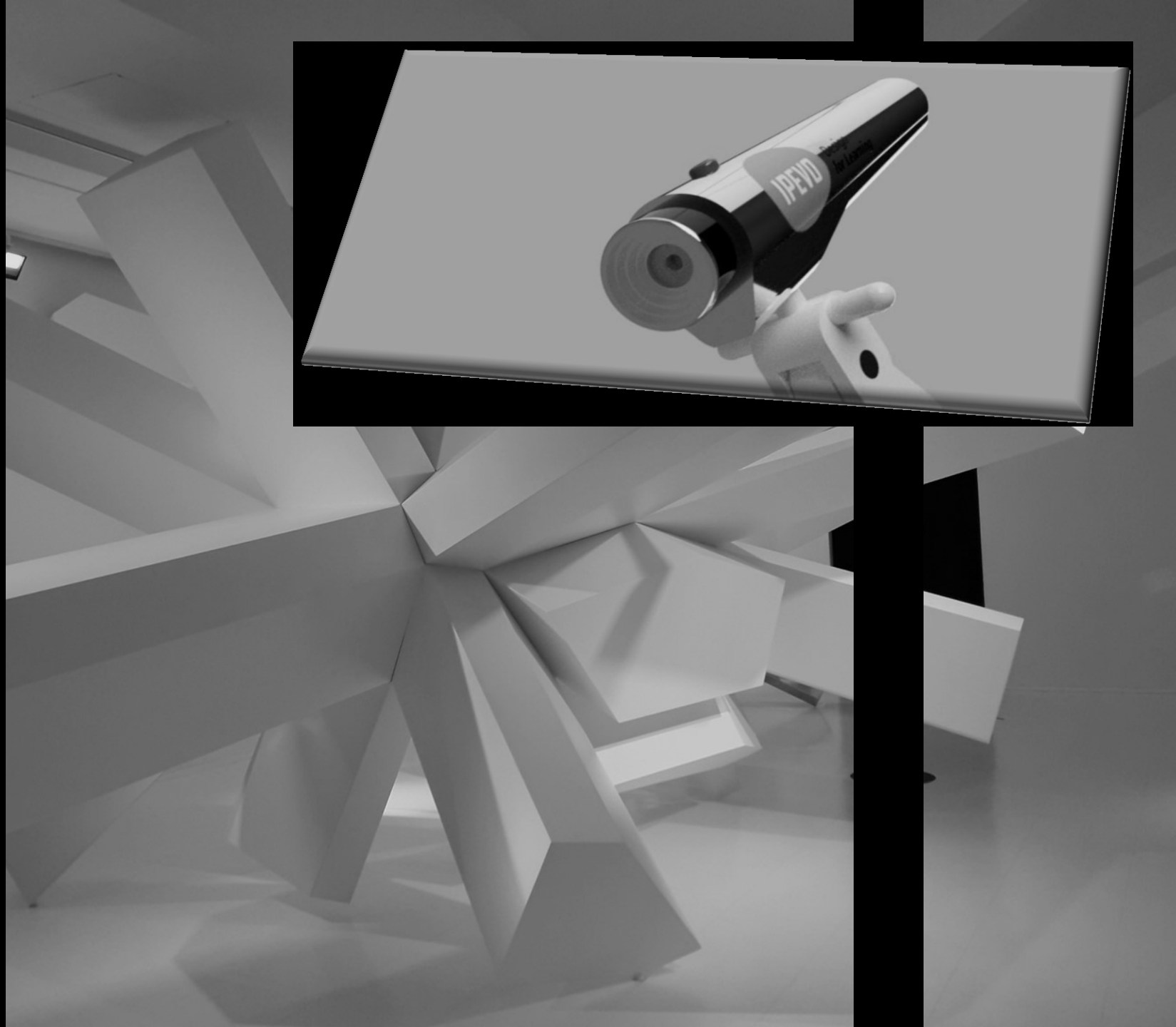
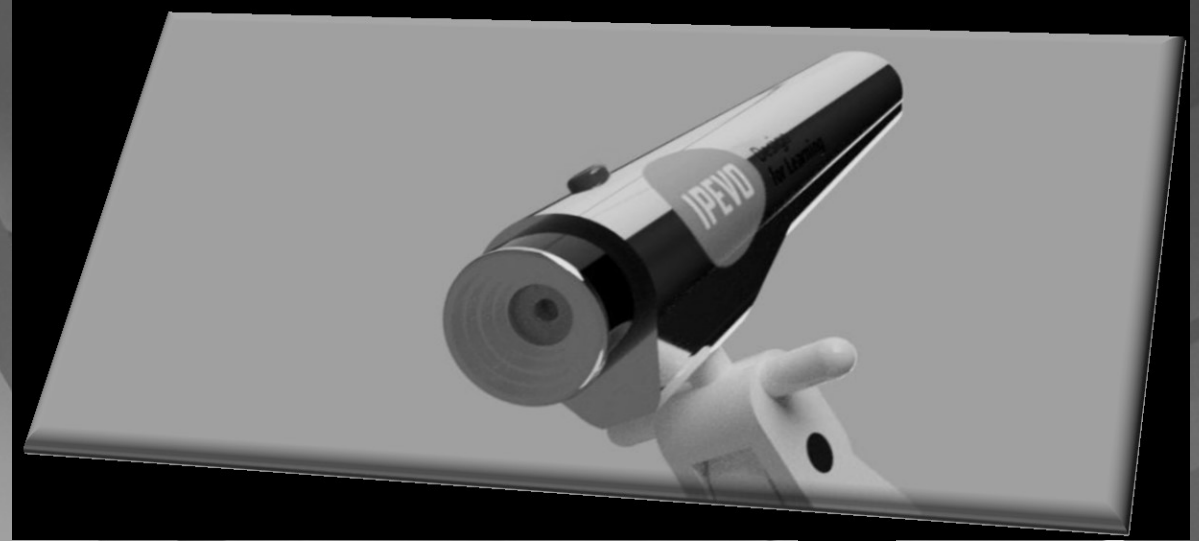


And they also said that they found using design fiction to be a really useful tool to support the effective delivery of design within design and technology education.



So what next? ...

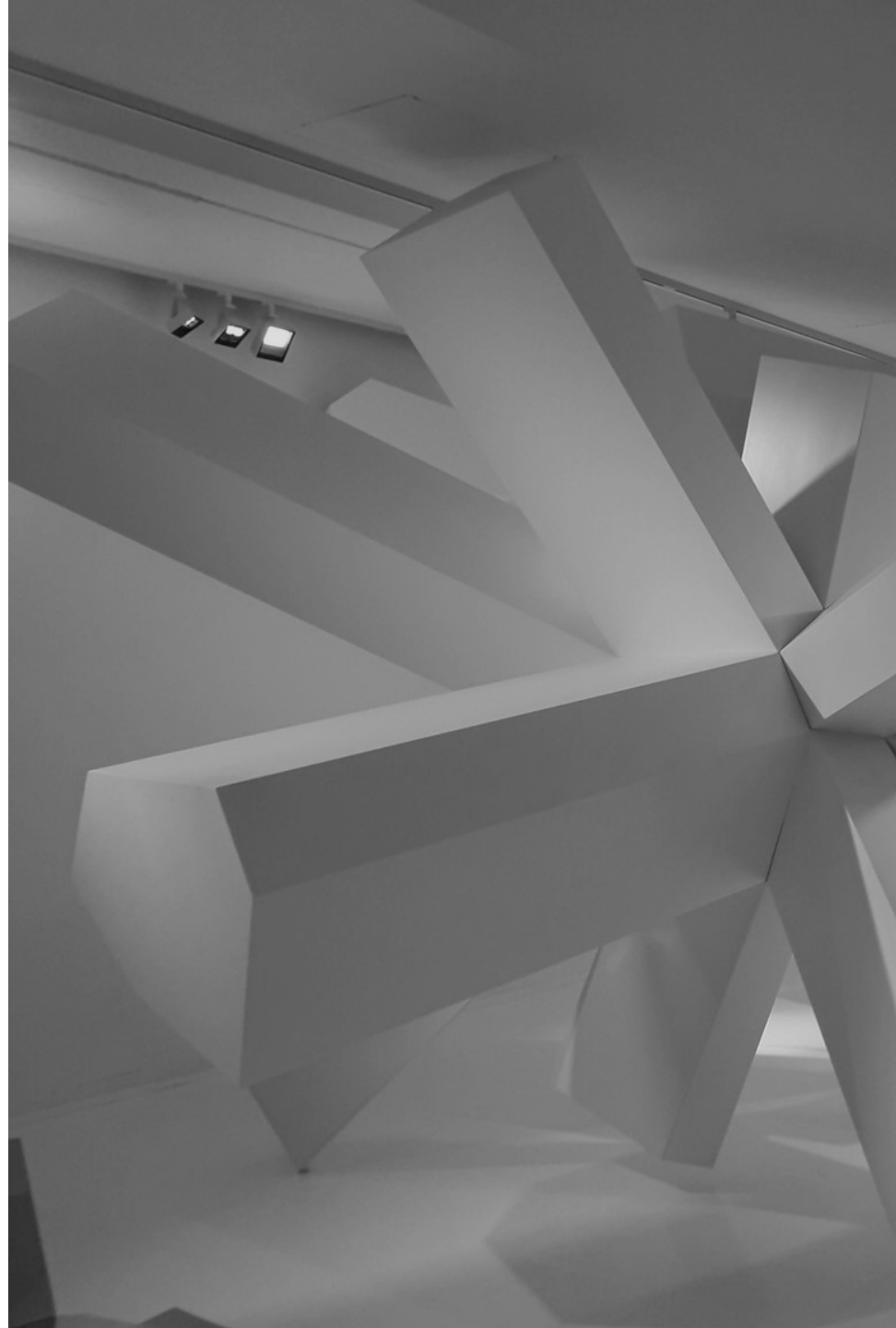
**In the decade since
completing their teacher
training design fiction
has become well-
established as a valid
concept within the field
of speculative design...**



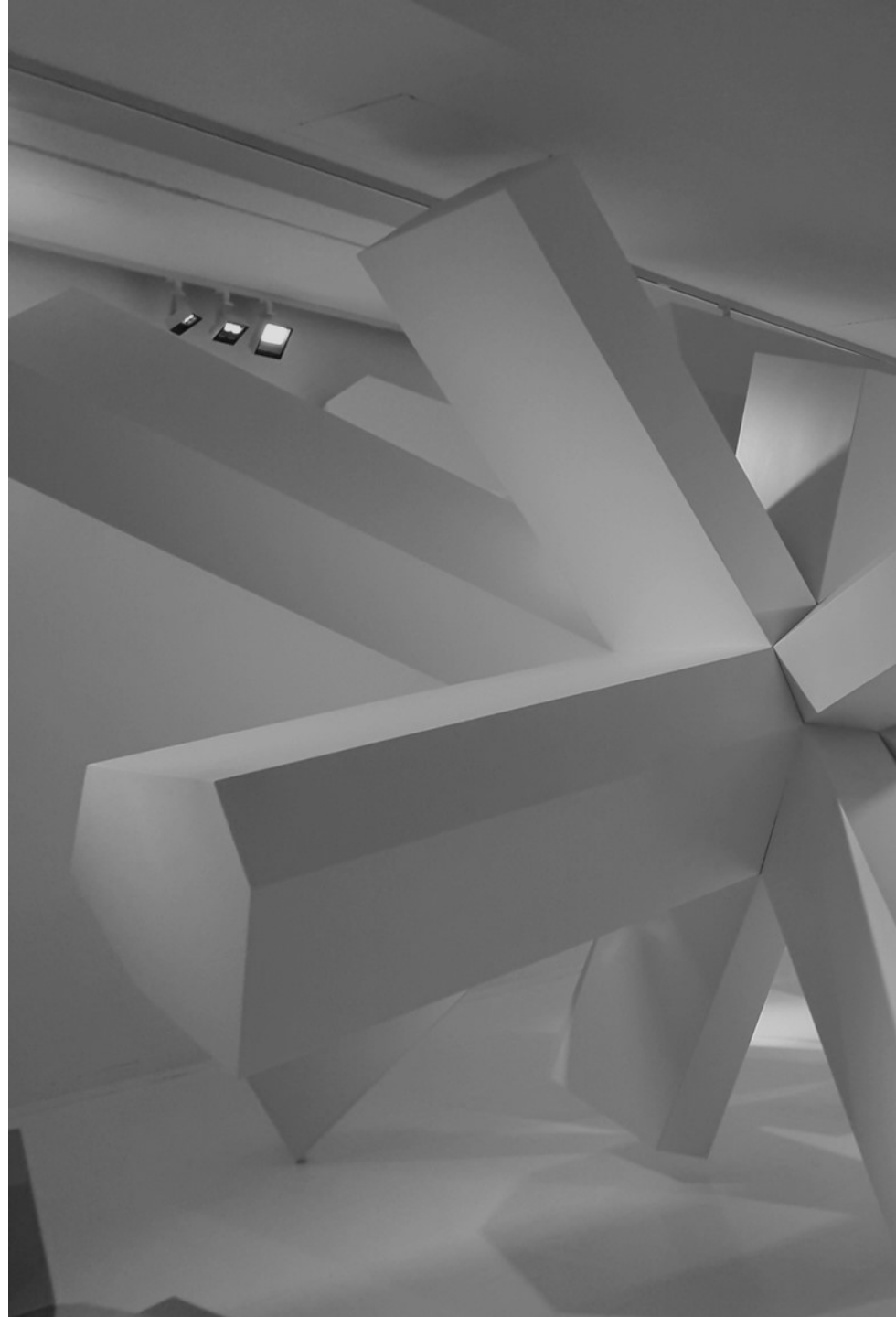
...and students (the pre-service who are now experienced teachers) recalled design fiction as a concept introduced to them at University.

However, while it was evident that they had been active in using design fiction to stimulate design work within their own practice, it became clear that they hadn't always updated their working knowledge of the notion itself.



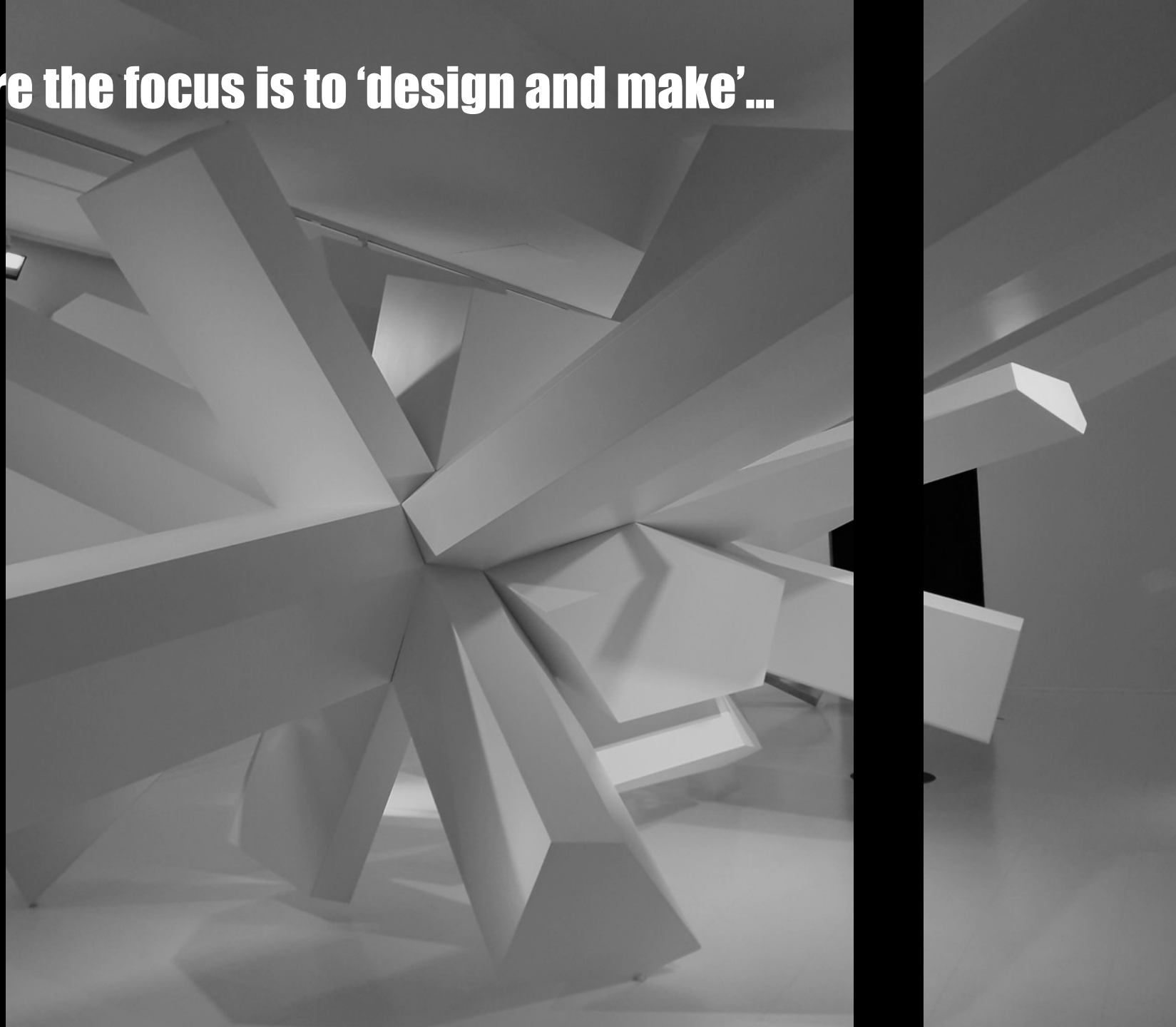


Within the context of global consumerism, a curriculum that advocates the consideration of the long-term effects that new technologies may have within society could be just what the subject needs.



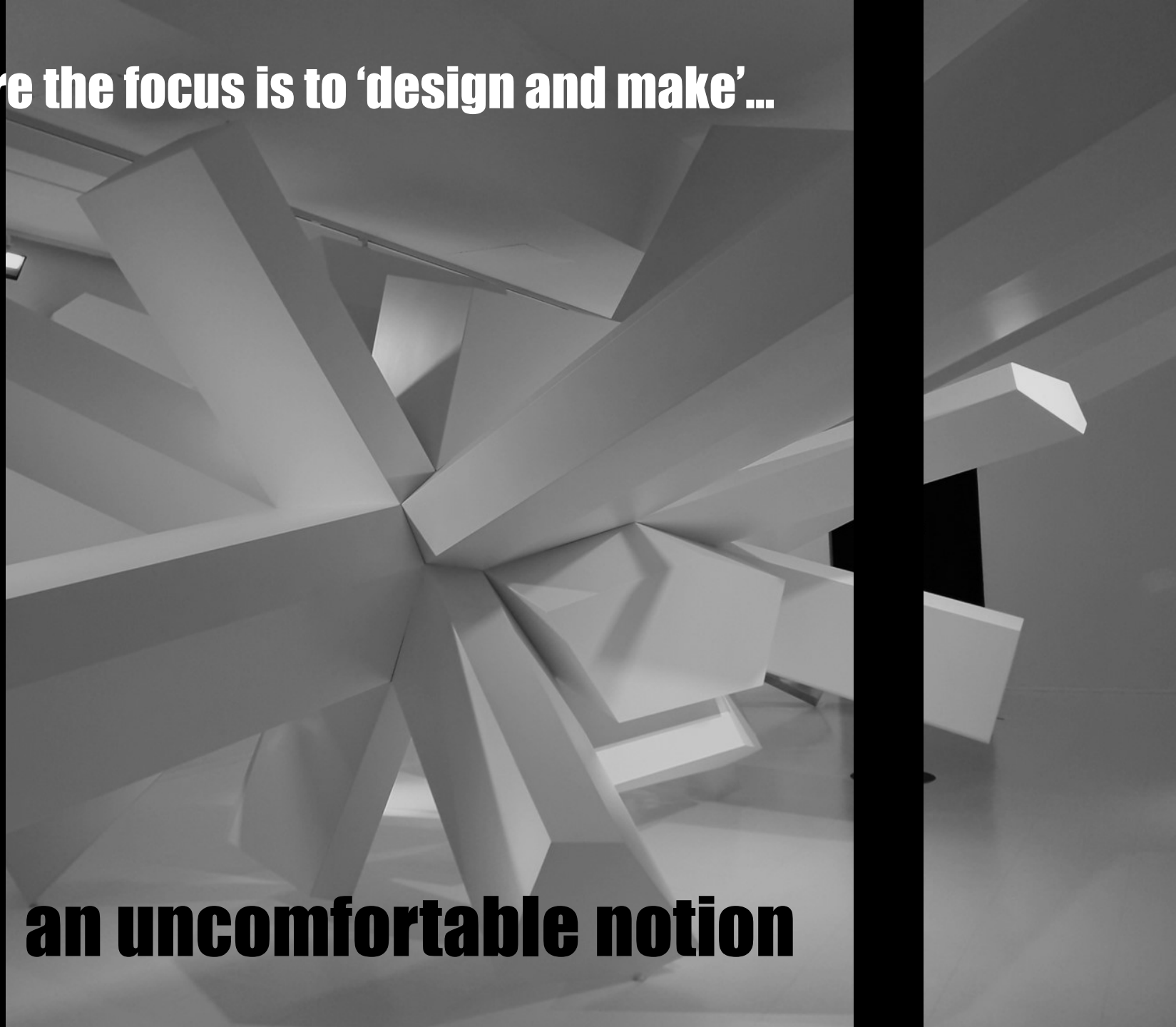
However, how this could be developed within the design and technology curriculum would need careful consideration...

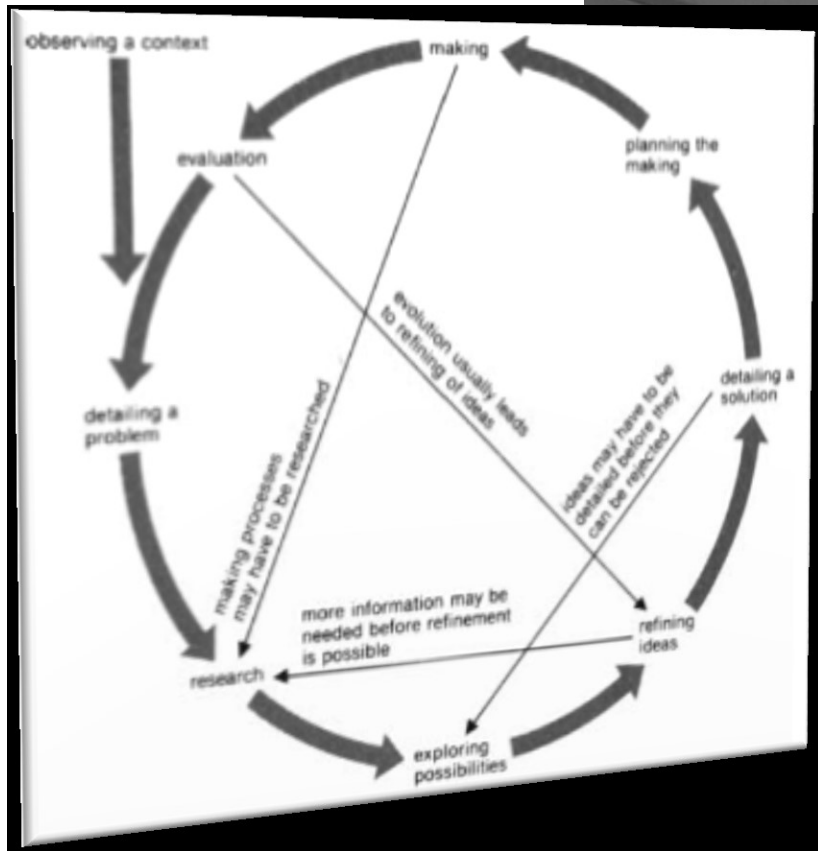
...because for a subject where the focus is to 'design and make'...



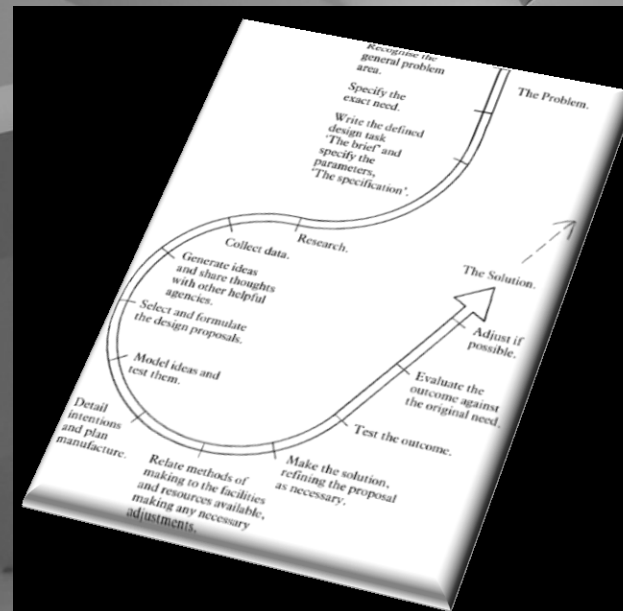
...because for a subject where the focus is to 'design and make'...

...this could be an uncomfortable notion

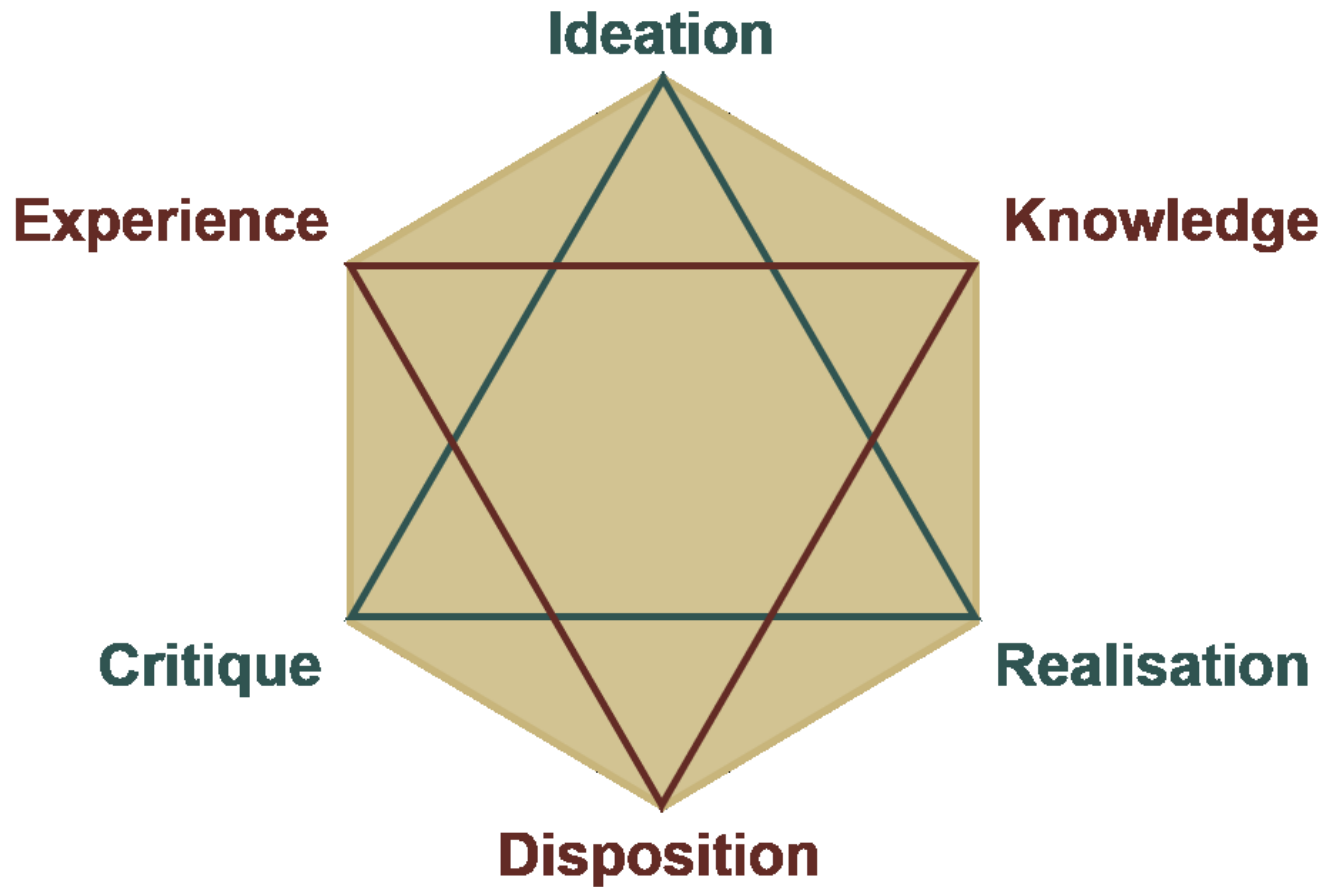




A starting point could be to challenge the subject's well-established pedagogical models of design.



Describing design and technology, adapted from Kimbell & Stables (2007:73)

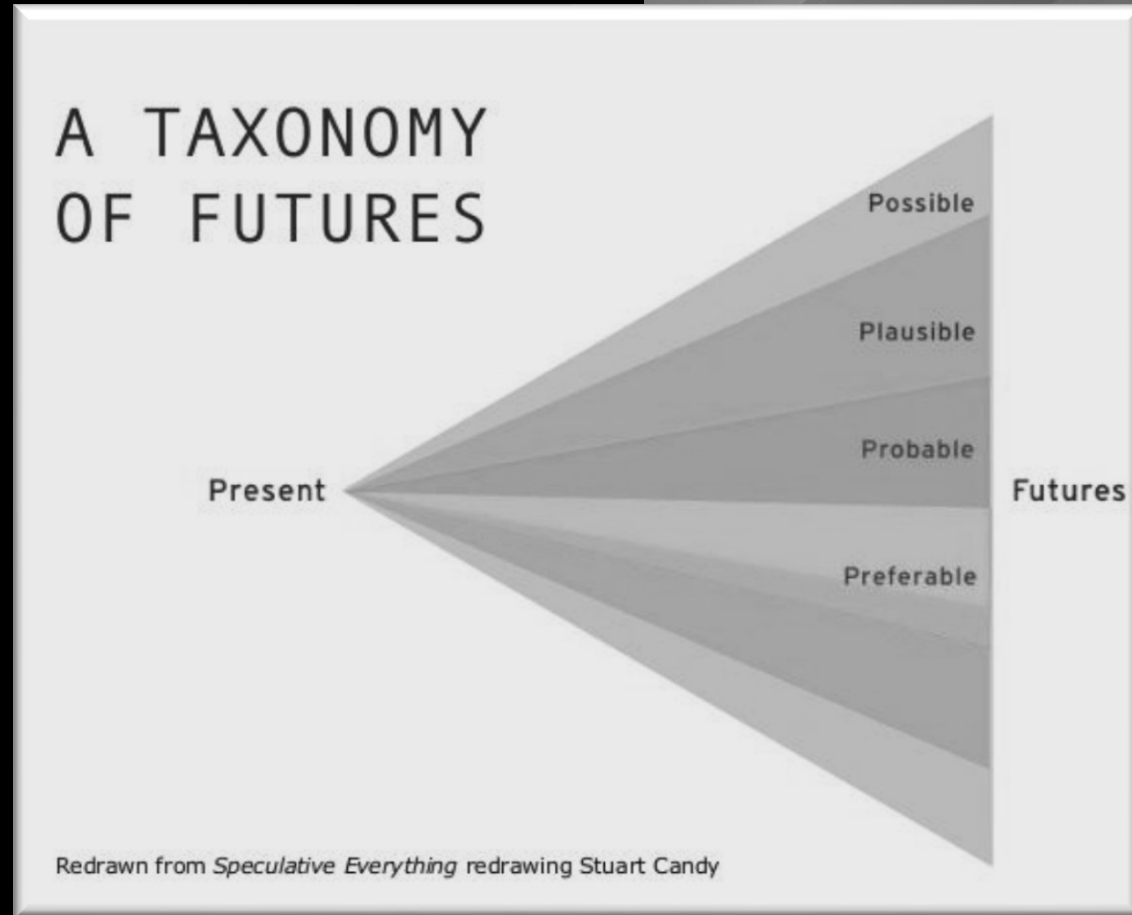


To challenge current and historic understandings of design and technology...

Irving-Bell et al., 2019

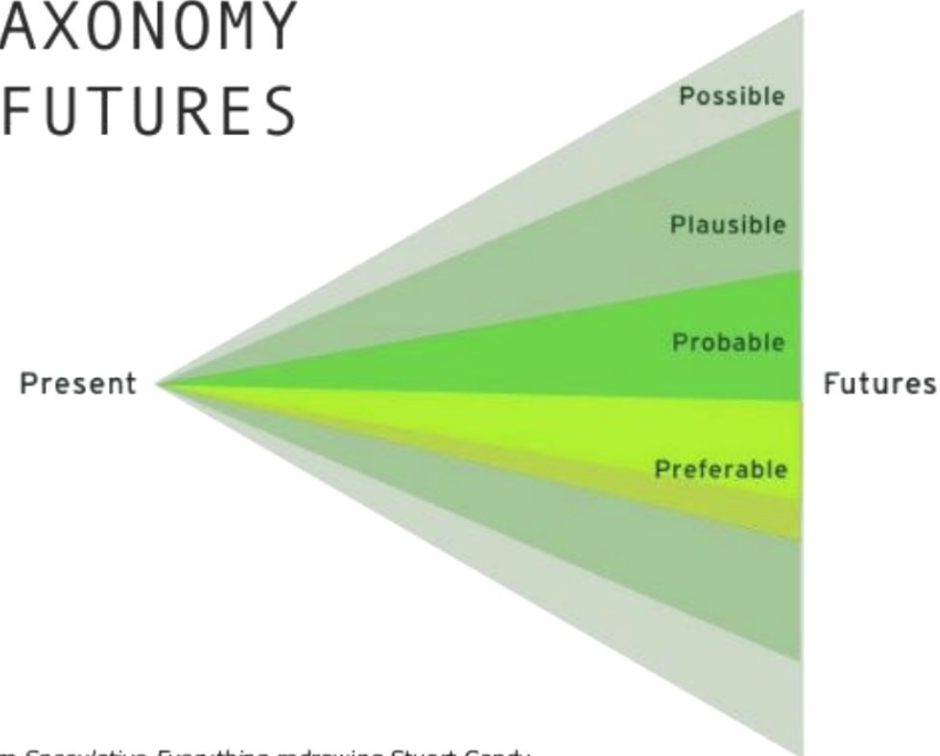
Challenging current and historic understandings of design and technology: a working model

**To perhaps
replace
them, with a
different
model that
better
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new ways of
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A TAXONOMY OF FUTURES

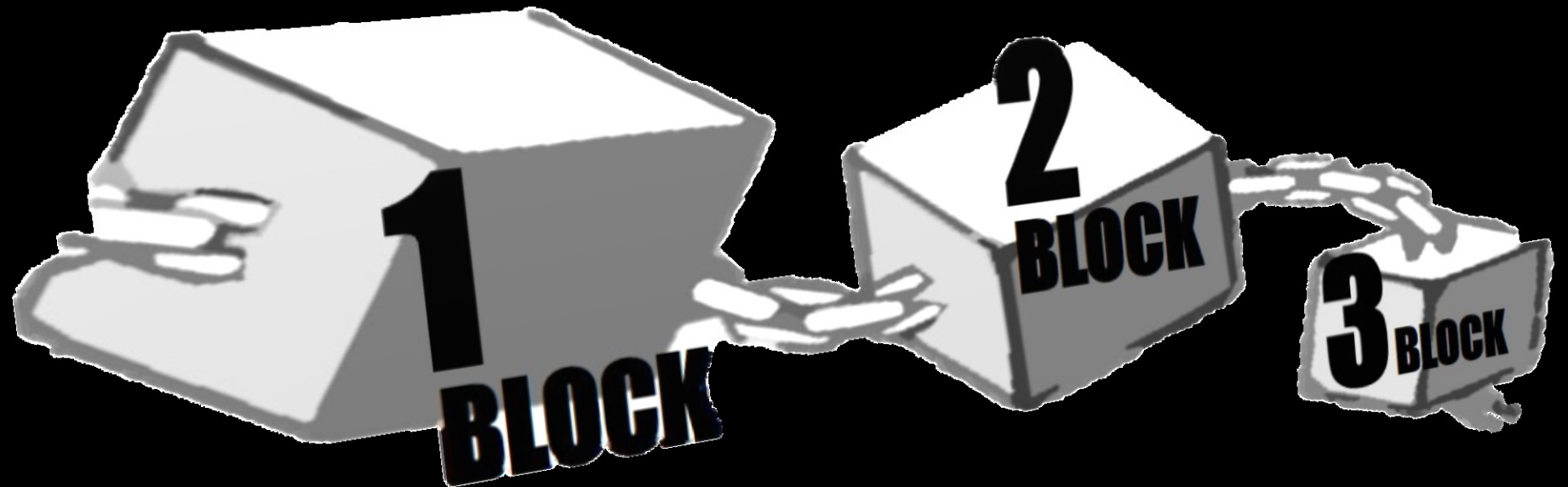


Redrawn from *Speculative Everything* redrawing Stuart Candy

In moving this work forward, our next steps would advocate ways in which teachers may be supported to access and develop resources which reflect current thinking within the field of (speculative) design.



Particularly with regard to spimes, the notion of blockchain and the use of new, transformative technologies ...



BOSCH
META-GLIDE
3000
 Connected Steam
 Iron Technology

ARE YOU IN THE KNOW?

Use History
 Tuesday 21st March 2020
 User: [Avatar] Duration: 13 mins
 Friday 24th March 2020
 User: [Avatar] Duration: 18 mins

Data Usage
 Data consumption
 Energy usage >
 Software updates >

Materials
 Product composition:
 Aluminium - 25%
 Bio-Plastic - 70%
 Manufacture - 5%
 No glue
 Magnet fastenings
 100% recyclable

Embodied Energy
 Extraction >
 Manufacture >
 Packaging >
 Distribution >
 Disassembly >
 Recycling >

Secure Metahistory Certified

Now available at
 amazon John Lewis Currys PC World

...to help children to better understand the concept of responsible design.

BOSCH
META-GLIDE
3000
 Connected Steam
 Iron Technology

ARE YOU IN THE KNOW?

Use History
 Tuesday 21st March 2024
 Duration: 23 mins
 Friday 24th March 2024
 User: [Avatar] Duration: 18 mins

Data Usage
 Data consumption: [Bar chart]
 Energy usage >
 Software updates >

Materials
 Product composition:
 Aluminium - 25%
 Bio-Plastic - 70%
 Miscellaneous - 5%
 No glues
 Magnet technology
 100% recyclable

Embodied Energy
 Extraction >
 Manufacture >
 Packaging >
 Distribution >
 Disassembly >
 Recycling >

Secure Metahistory Certified

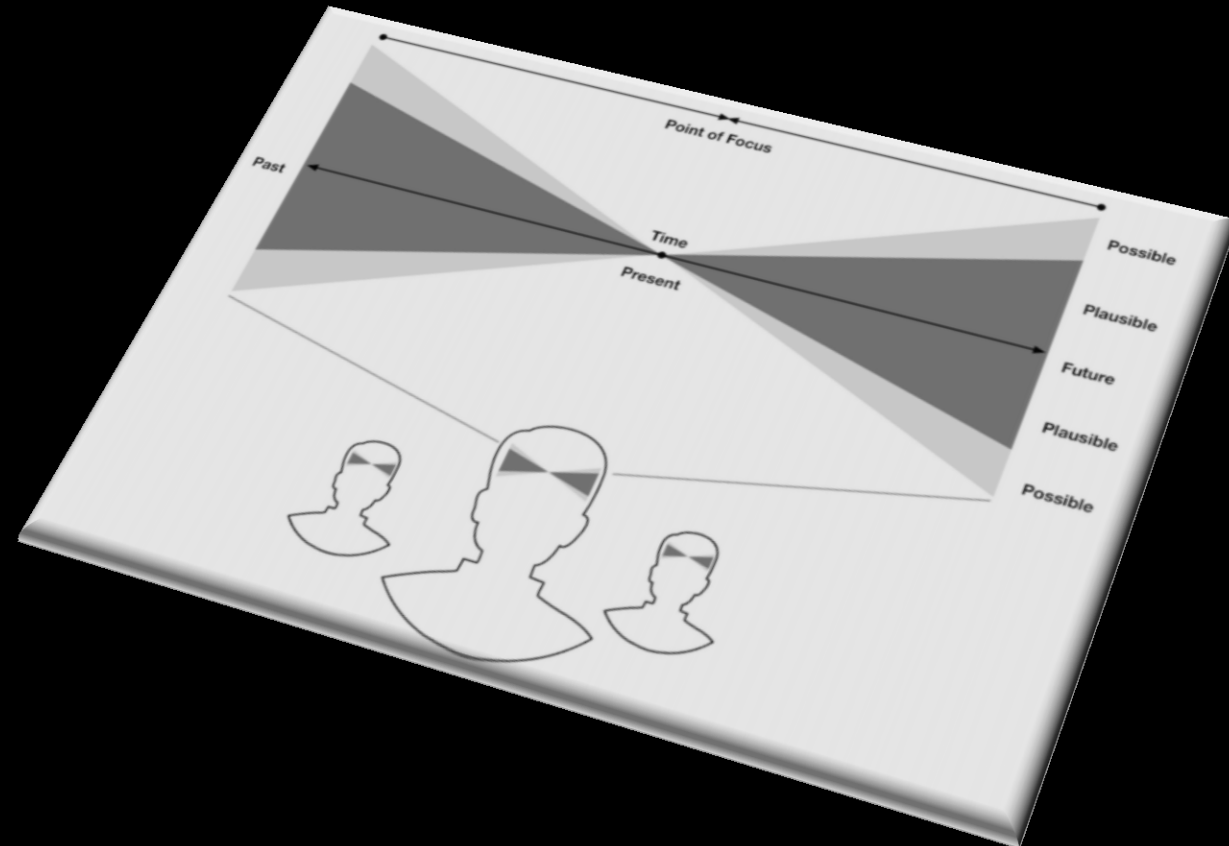
Now available at
 amazon John Lewis Currys PC World

...to help children to better understand the concept of responsible design.



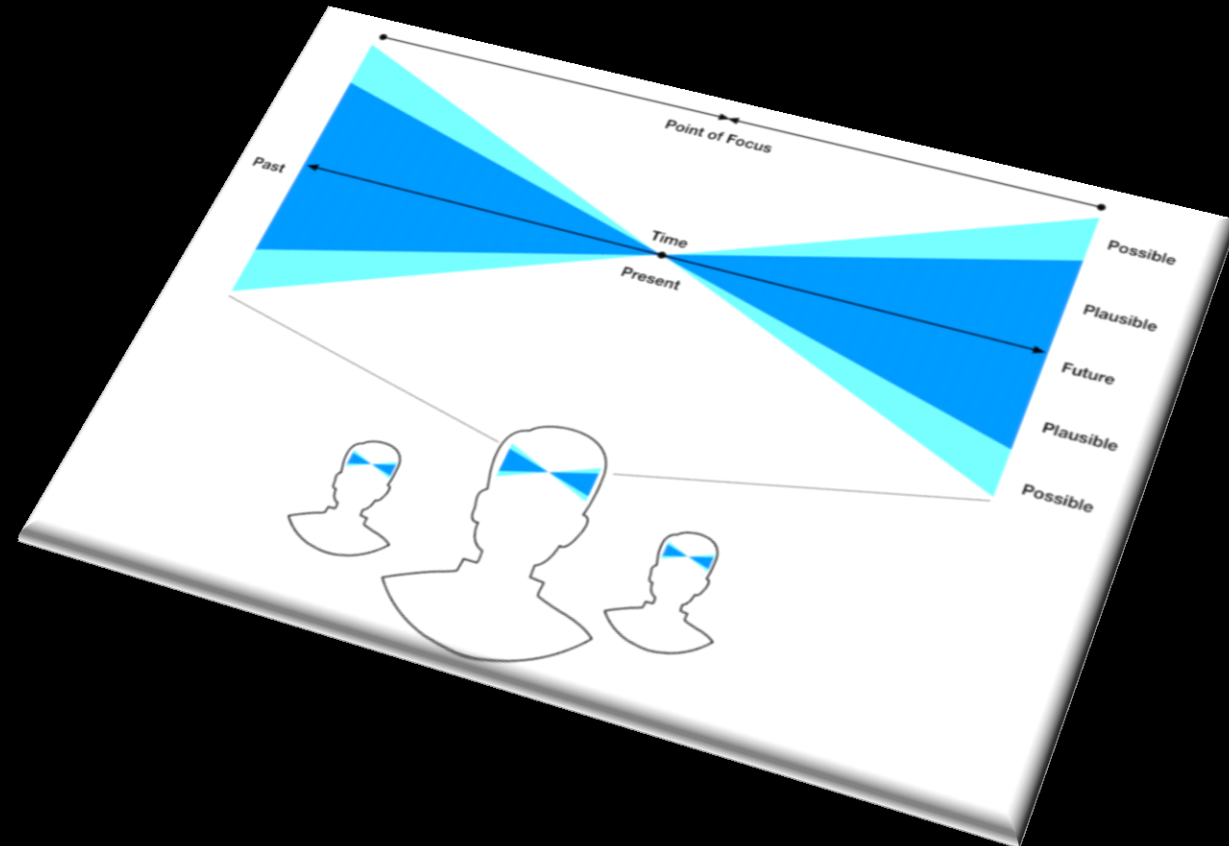
In conclusion:

Early work sought to embrace notion of design fiction, and it is clear that it is a useful platform from which to instigate and stimulate design debate



The hermeneutic model of the future (Lindley, 2018:156)

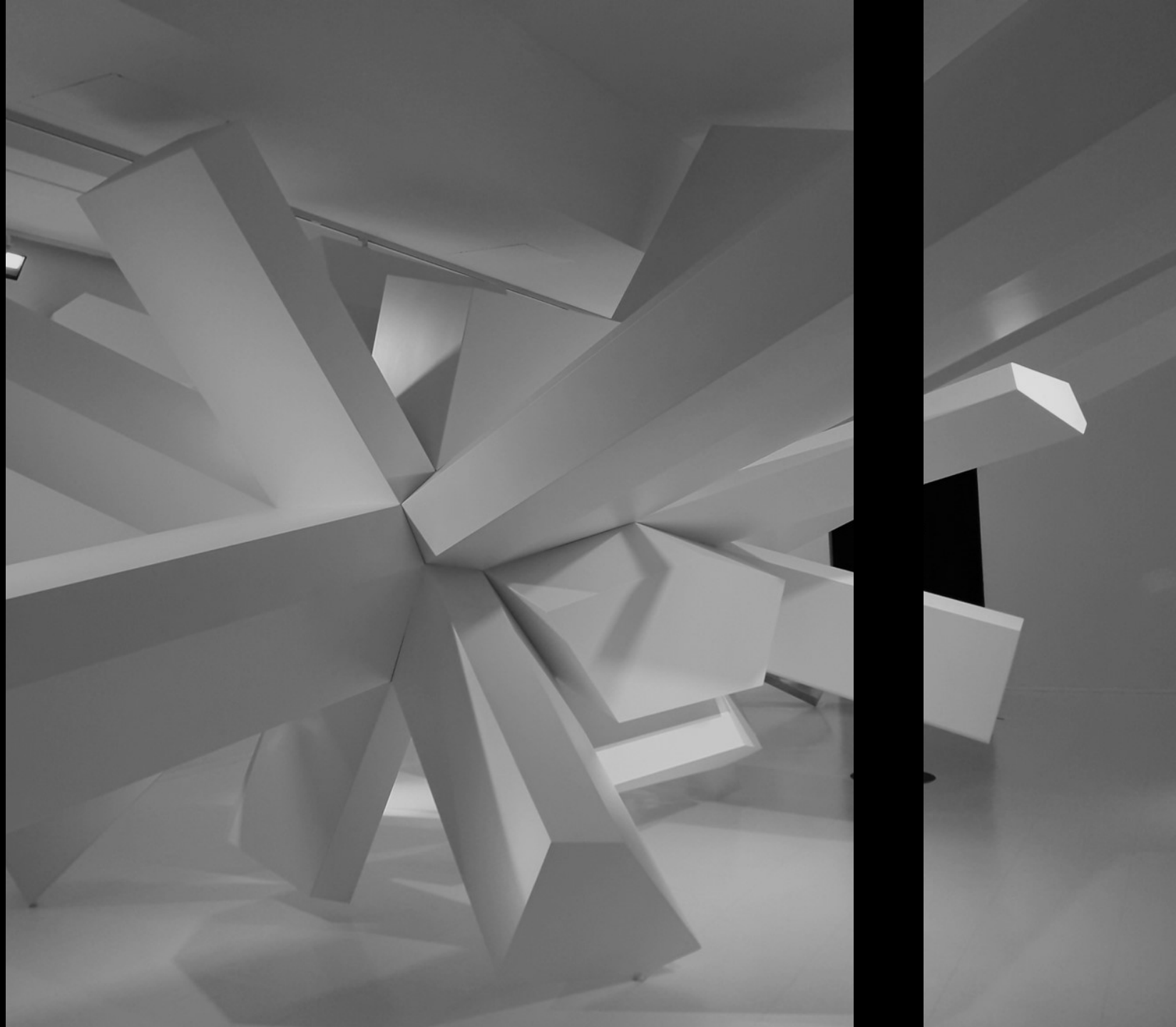
However, while the field of speculative design has evolved significantly over the past decade, the innovations and developments which could be advantageous to the study of design in schools, have not been as successfully transferred into the classroom as perhaps they might have been.



The hermeneutic model of the future (Lindley, 2018:156)

“Embracing new approaches to design thinking may be pivotal in supporting teachers and will be the focus of future work, to support teachers of design and technology to re-imagine the subject, its purpose and value within a modern school curriculum”

Irving-Bell *et al.*, 2019



Featuring undergraduate work from our design and technology student teachers including contributions from:

Ryan Beales, David Fields, Joseph Johnson, Marc Simpkin, Katherine Elliott, Phil Johnson, Andrew Connolly, John Cox, Sharon Davies, Myles Hall and Richard Woods.

And with special thanks for also sharing their student and pupils' outcomes:

**Katie Holland,
Shrewsbury International School,
Bangkok,
formerly Le Rocquier School, Jersey, UK.**

**Traci Pierce,
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Thankyou

to our contributors

Key References

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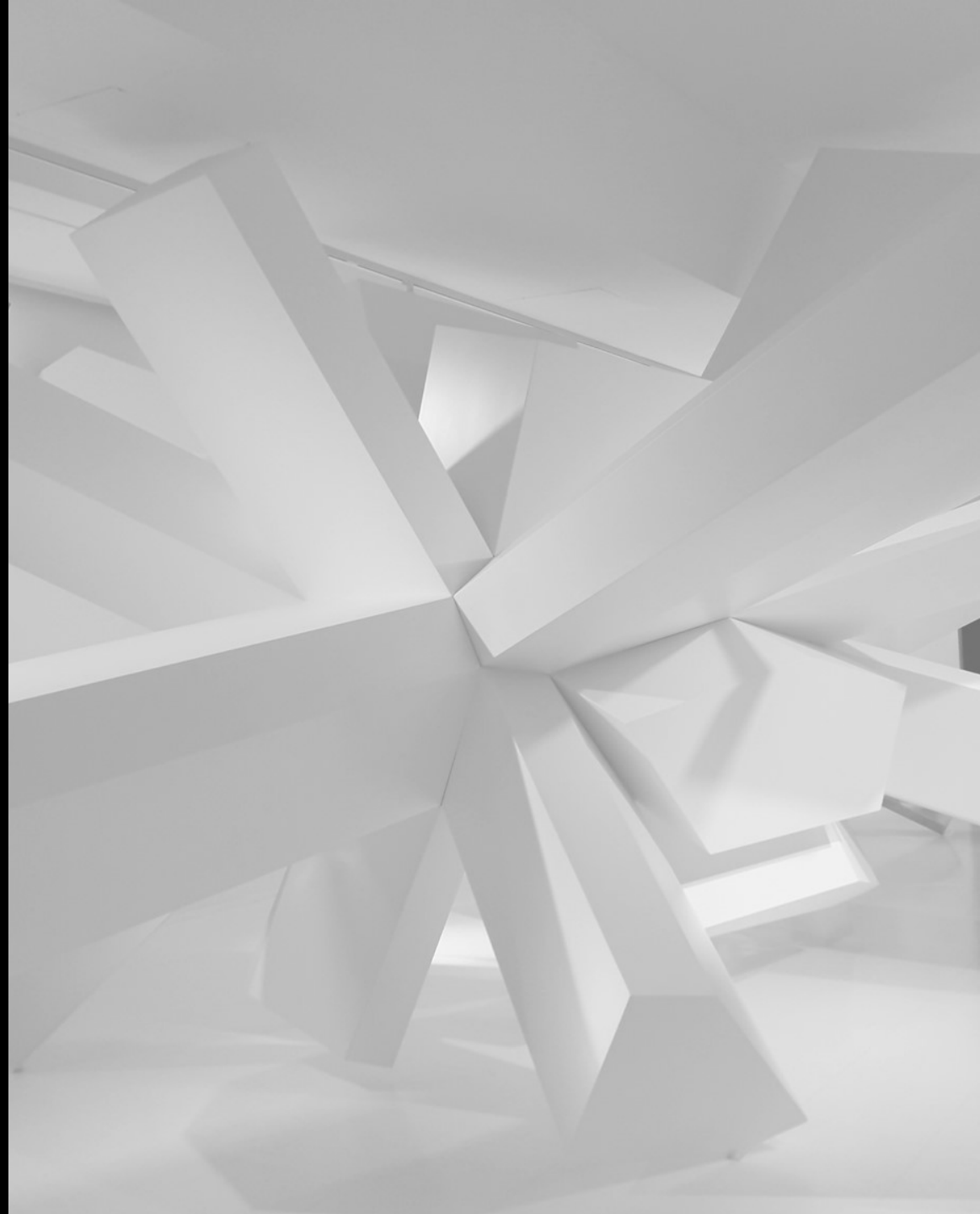


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Design Fiction a decade of reflection; *The impact of teacher training on classroom practice.*

If you would like more information, please do not hesitate to get in touch



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