

# Somaesthetics and the non-digital in mixed reality (XR) education design

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## OVERVIEW

- Background: Mixed Reality (XR) in Education.
- The potential of the Non-Digital & Handmade in XR education
- Enhancing 'authenticity' and meaningfulness in XR education design through non-digital and handmade (Walter Benjamin's discourse).
- Implications for XR / digital forms of education design + practice.



# 1. Mixed Reality (XR) in Education





# The Reality-Virtuality Continuum



real

virtual

**Mixed Reality (MR)**

Image from:  
<https://matteoocurcio.com/how-mixed-reality-is-shaping-tomorrow-breaking-down-the-walls-between-atoms-and-pixels>



# The Reality-Virtuality Continuum



real

virtual

## Mixed Reality ('XR')

Image adapted from:  
<https://matteo-curcio.com/how-mixed-reality-is-shaping-tomorrow-breaking-down-the-walls-between-atoms-and-pixels>





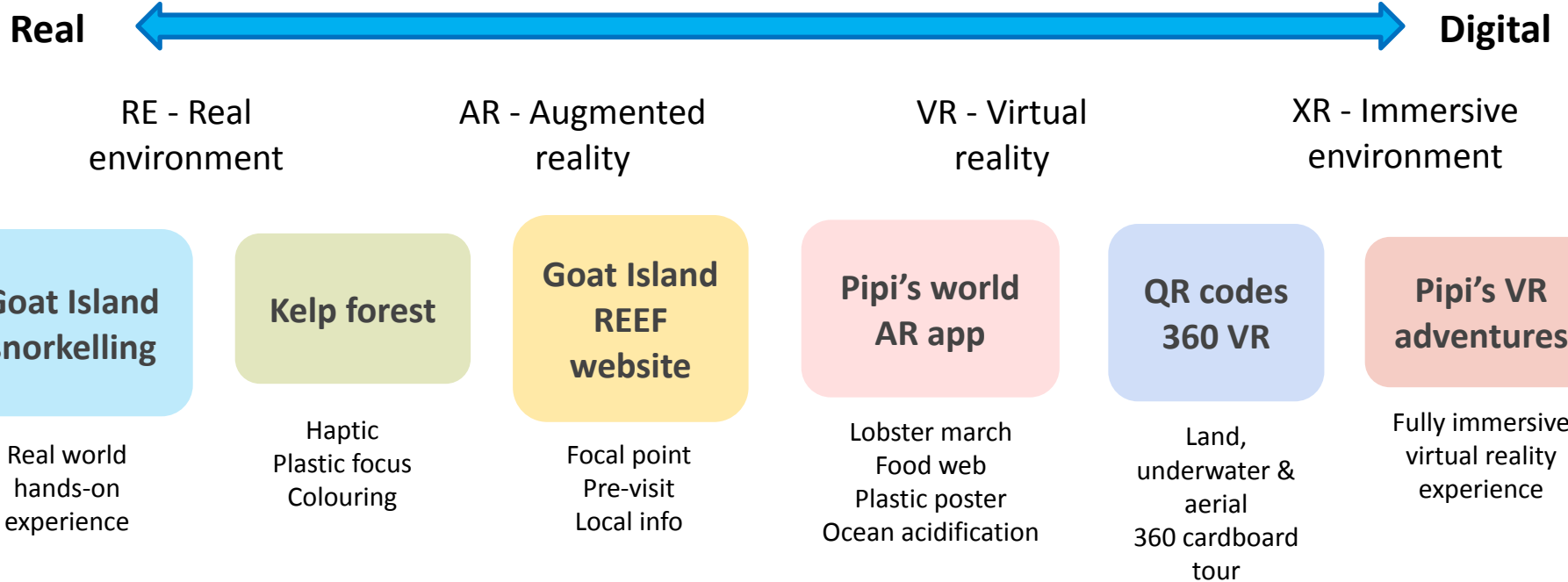
# Genuine investigations in the real world



# Immersive hybrid environments



# Mixed Reality Immersion Continuum





# Digital Technology Focus of XR

A black VR headset with a geometric pattern on the front is positioned on the left. To its right are two black VR controllers, each resting on a black charging dock. In the background, a laptop screen displays a Windows interface with two user profile icons. The entire setup is on a light-colored, textured surface, possibly a desk or bed, with a blue and purple fabric backdrop.

A close-up photograph showing several hands touching a large, dense array of red, cylindrical haptic actuators. The actuators are arranged in a grid pattern on a dark surface. The hands are positioned at different points of contact, illustrating the tactile feedback provided by the technology.

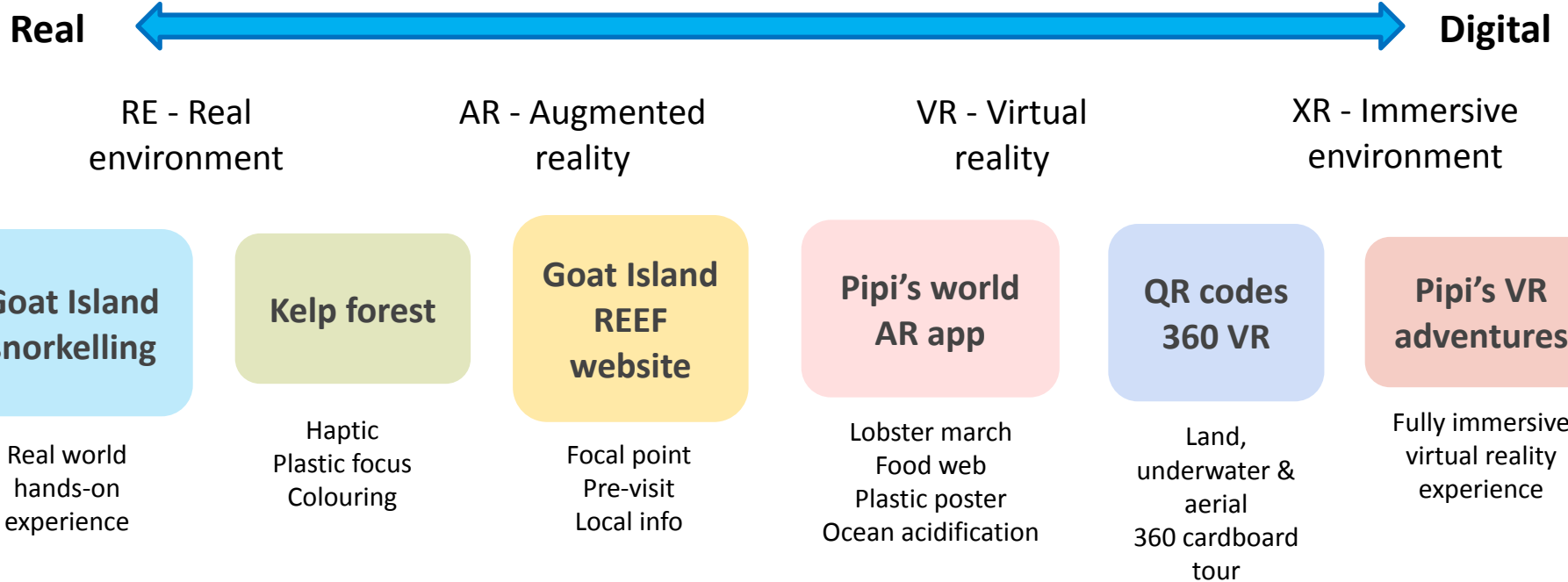
# The Potential of the Non-Digital?



# The Potential of the Handmade?

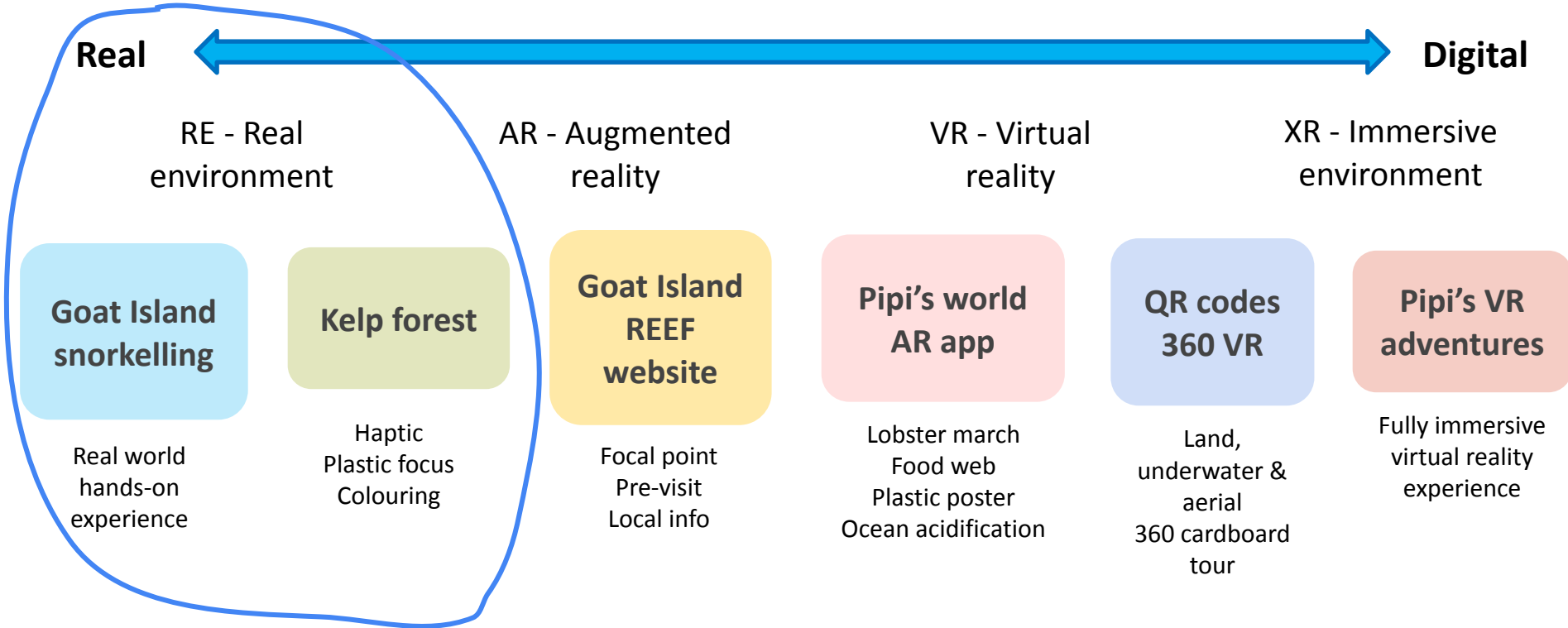


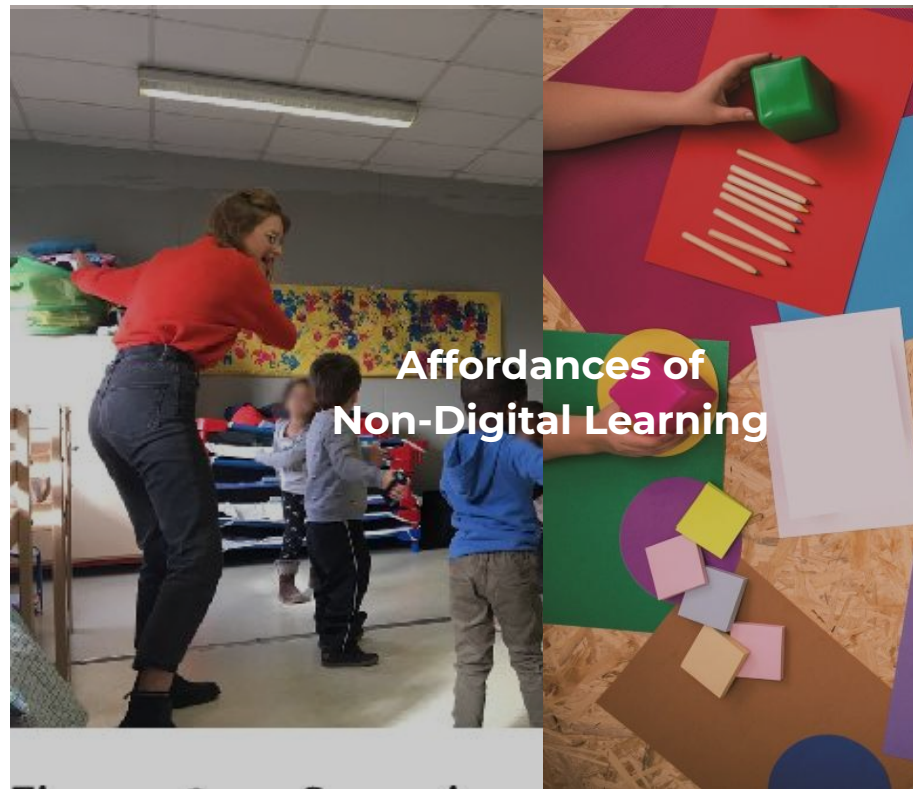
# Mixed Reality Immersion Continuum





# Mixed Reality Immersion Continuum

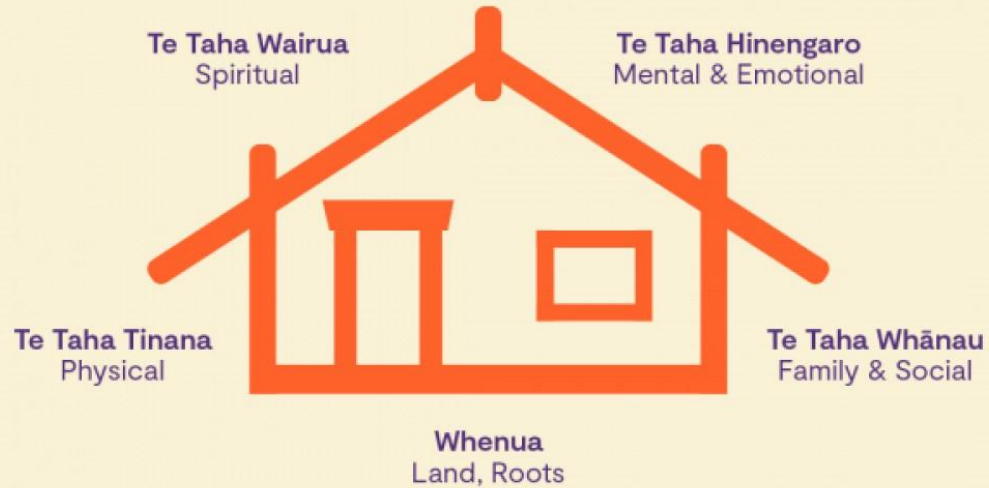








# TE WHARE TAPA WHĀ







# **Deeper Sense of Authenticity and Meaningfulness in XR**



# Walter Benjamin



# The Work of Art in the Age of Mechanical Reproduction

Walter Benjamin



Image from:  
<https://www.amazon.com/Work-Art-Age-Mechanical-Reproduction/dp/1667156071>

A perspective view of a long wooden tunnel, possibly a kiln, filled with rows of white mugs. The mugs are arranged in neat, repeating rows that recede into the distance. The walls of the tunnel are made of vertical wooden planks. At the far end of the tunnel, a bright, glowing light source creates a strong lens flare effect, illuminating the scene with a warm, orange-yellow light. The mugs in the foreground are slightly out of focus, while those further back are more sharply defined by the light.

# Mass Produced



A high-angle, close-up photograph of a ceramicist's hands shaping a piece of grey clay on a white pottery wheel. The ceramicist has dark hair and is wearing a patterned top. The workshop environment is visible in the background, featuring a brick wall, a wooden workbench, and various pottery-making tools and materials. Two finished ceramic vessels, one large and one small, both featuring a handprint logo, stand on the workbench. A palette with dark glaze and a brush is also visible. The text "Hand Crafted" is overlaid in white, bold, sans-serif font in the center of the image.

# Hand Crafted



# **Indigenous Perspectives on the Handmade and Handcrafted**



MAKING HISTORIES AND NARRATING THINGS: HISTORIES OF HANDMADE OBJECTS IN TWO  
INDIGENOUS COMMUNITIES

A Thesis Submitted to the College of  
Graduate and Postdoctoral Studies  
In Partial Fulfillment of the Requirements  
For the Degree of Doctor of Philosophy  
In the Department of History  
University of Saskatchewan  
Saskatoon

By

Katya Claire MacDonald

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**Ngā kura a Hineteiwaiwa:**  
**The Embodiment of Mana Wahine in Māori Fibre Arts**

A thesis

submitted in partial fulfilment

of the requirements for the Degree

of

Doctor of Philosophy

at

**The University of Waikato**

by

**Donna Campbell**

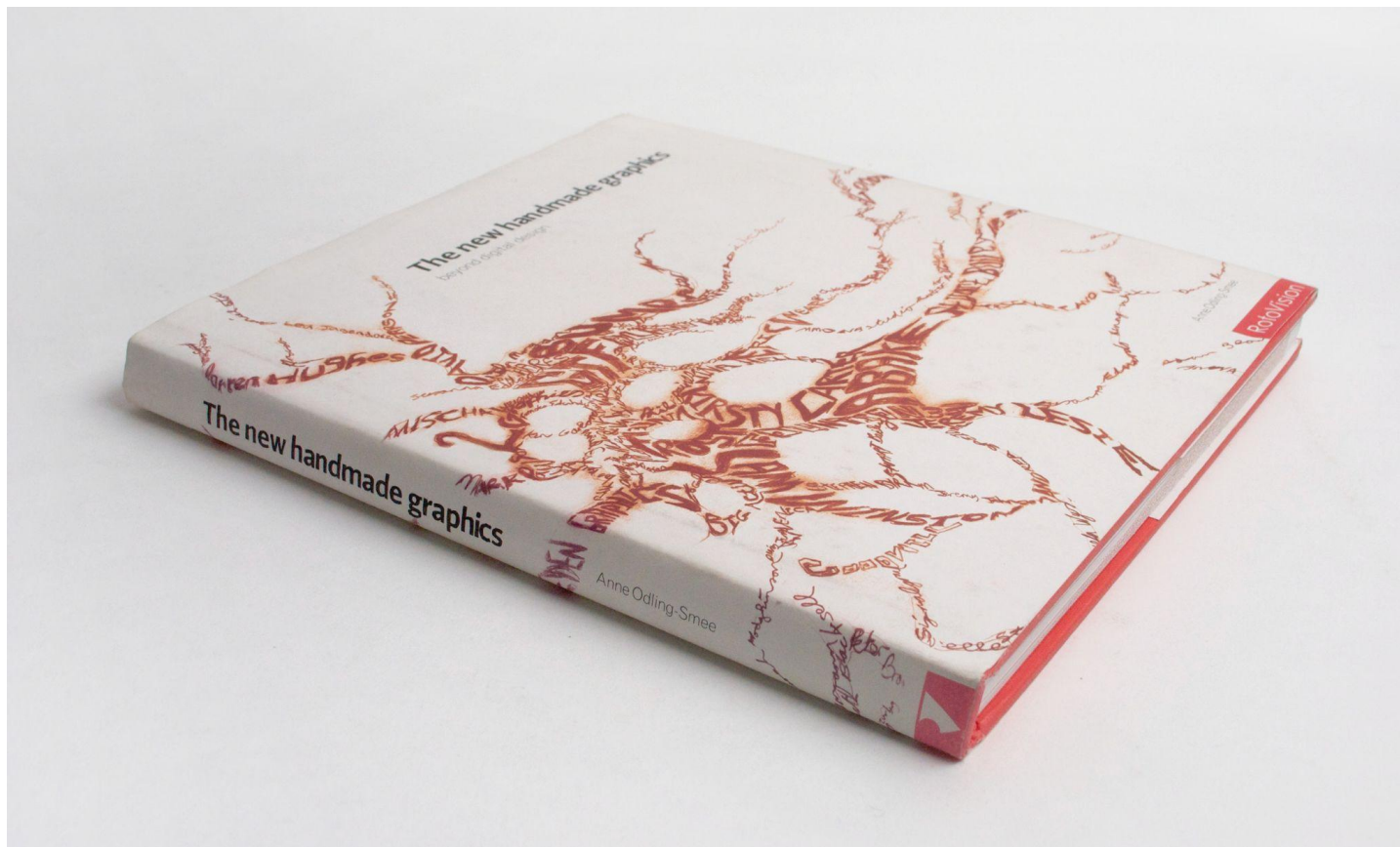


THE UNIVERSITY OF  
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**2019**







**The New Handmade Graphics** by Anne Odling-Smee



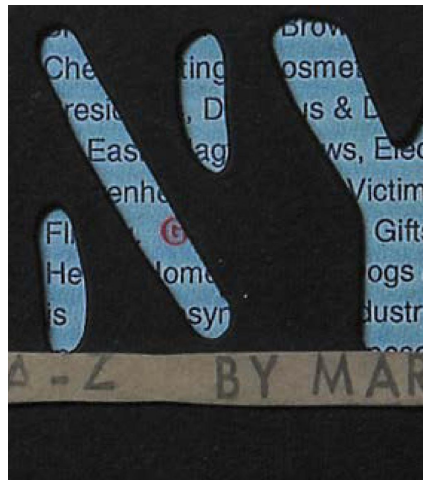
## MMD

**A-Zivels, NY**  
 In 2000, Karin Sargent started working with artist Patricia Bitt of Bitt and Roberts Books on a series of projects that began with digitizing Bitt's hand-drawn alphabet for use in the graphic novel.

Coeditor was the first MMD and publication was a challenge of design work, involving that of Bitt and Roberts Books. There were no design fees; this job was the paper was supposed to be a change to the new book series.

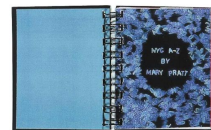
In December 2005, Sargent worked with Bitt to help to produce A-Z, a 30-page book of all the letters and numbers in the world. The idea was to create a book that would be used in other work. Having agreed to accept the book as a gift, Sargent and Bitt worked out that it would be more economical to do it in the future, when the process in itself is more used and the work is longer than it is for. They brought paper from Bangalore, then worked with a printing company in Bangalore who did the printing, the book (below, right), printing an edition of 100, which were then bound by The School Book Company (below in India).

Sargent describes how being in India and being part of the whole production process had a big influence on the book's content and design (below), which was done on NY. This can be seen in comparing it with this local children's book (below, left). Sargent thinks the differences in content and design with the other projects and books in the series are what probably led to the design.



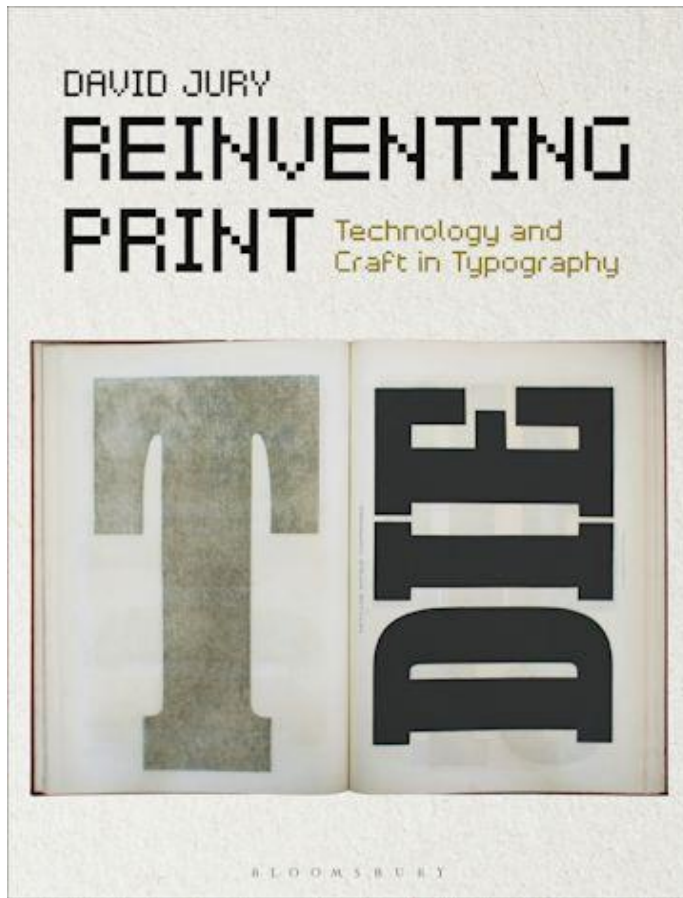
**NYC A-Z (New York 1995)**  
 Karin Sargent and Patricia Bitt of Bitt and Roberts Books (below) designed the NYC A-Z. A-Zivels is the first MMD and publication was a challenge of design work, involving that of Bitt and Roberts Books. There were no design fees; this job was the paper was supposed to be a change to the new book series.

## Nina Heller



NYC A-Z (New York 1995)



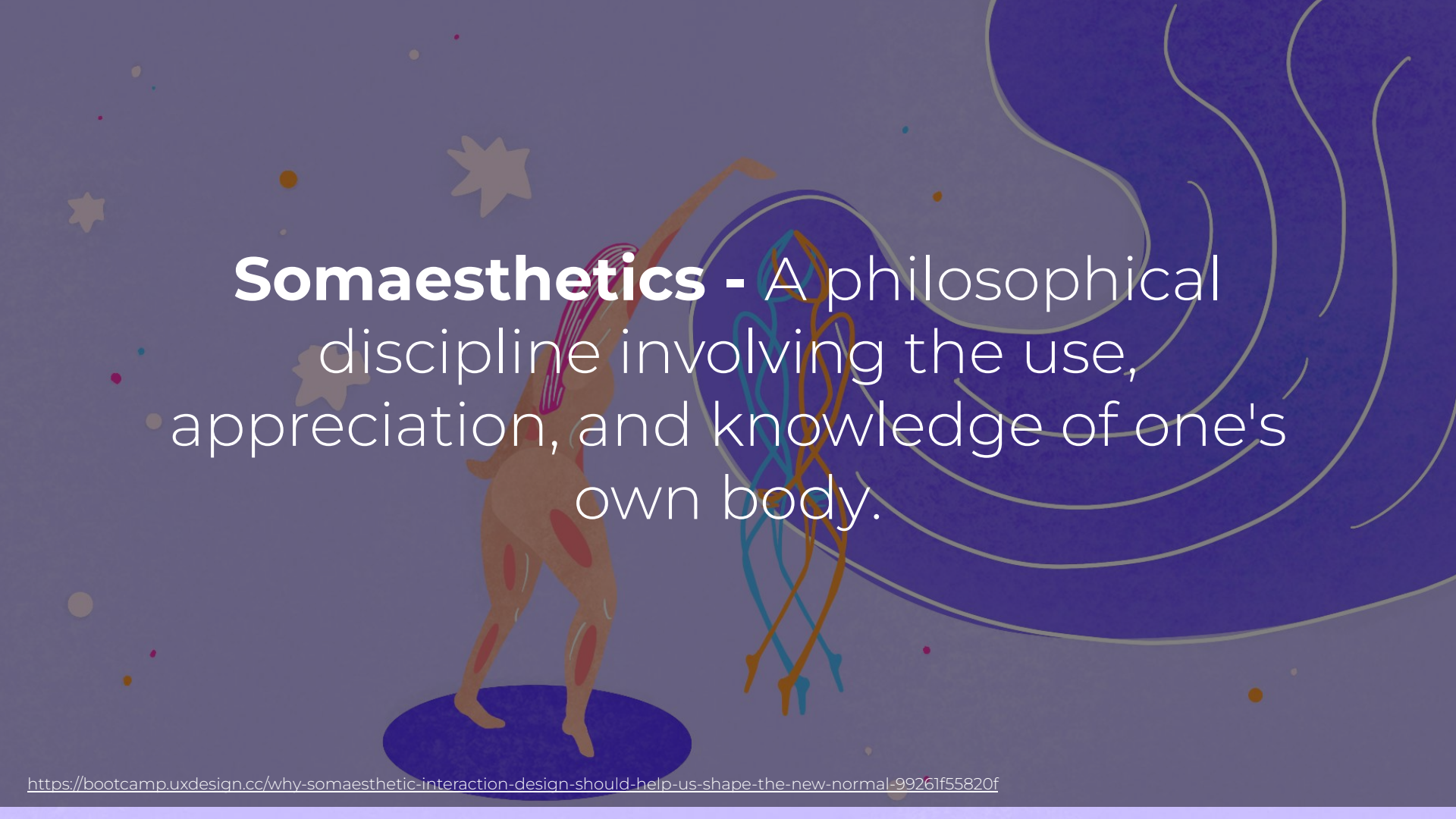


**Reinventing Print - Technology and Craft in Typography** by David Jury

A person with a blue, vine-like body stands in the center of a large, glowing yellow and orange circular field. The field has a textured, brush-stroke appearance with red and orange streaks. The background is a blue, textured surface. The person's body is covered in intricate white vine-like patterns.

# More 'Human', 'Organic', Embodied and Somaesthetic Sensibility in XR





**Somaesthetics** - A philosophical discipline involving the use, appreciation, and knowledge of one's own body.





# DESIGNING WITH THE BODY



SOMAESTHETIC INTERACTION DESIGN



Figure 4.3

Experiencing an inflatable mattress for bedsores

Hook, K. (2018). *Designing with the body: Somaesthetic interaction design*. MIT Press.

A photograph of two people in a lush forest. In the foreground, a person with long dreadlocks, wearing a black beanie and a black jacket, is seen from the back, reaching out to touch a tree trunk. In the background, a man with a mustache, wearing a brown jacket and a cap with sunglasses, is smiling and gesturing towards the tree. The tree trunk is covered in moss and has a textured, reddish-brown bark. The background is filled with green foliage and trees.


# Connect Learners to the Natural World





# Connect Learners to Indigenous Epistemologies





# Connect to Human Centered Concepts, Memories + Experiences

## Mixed Reality (XR) Immersion Continuum

**Real  
world**

**Digital  
world**



RE - Real  
environment

AR - Augmented  
reality

VR - Virtual  
reality

XR - Immersive  
environment

# NGĀ MIHI NUI, THANK YOU

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