

re-corporealising MRI data

a practice-based investigation through art and science

Jennifer Crouch – May 15, 2023

•living-matter •biology •fluids •data-visualization •digital-craft •textile •identity •biomedical imaging •medical subjectivity •entangled
•cancer recovery •patient subjectivity •corporeal matter •corporeality •embodied knowledge

MRI is a non-invasive biomedical imaging technology that visualizes tissues within the body. Corporeal matter as perceived by MRI straddles definitions of substance, organism, subject, and object. MRI interacts with the body through nuclear magnetic resonance and creates biomedical images using electrodynamics, signal analysis, and mathematics.

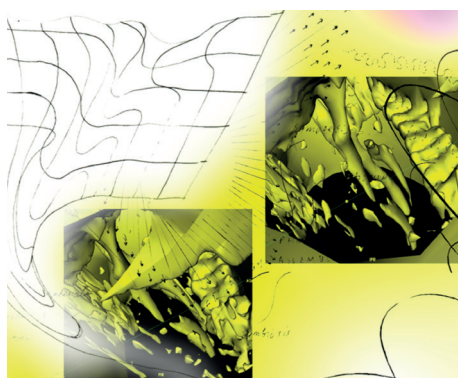
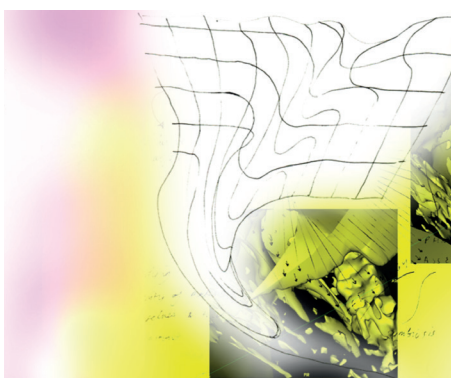
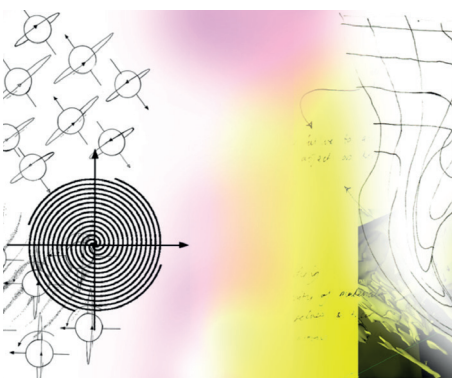
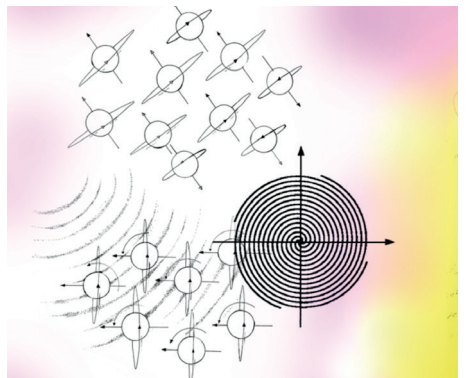
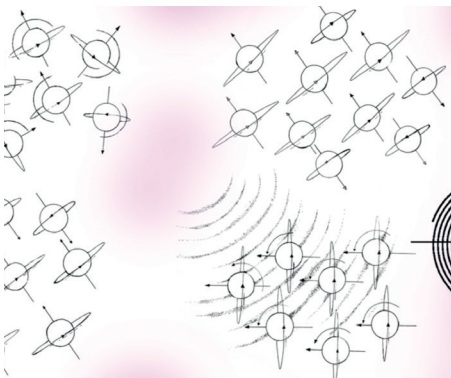
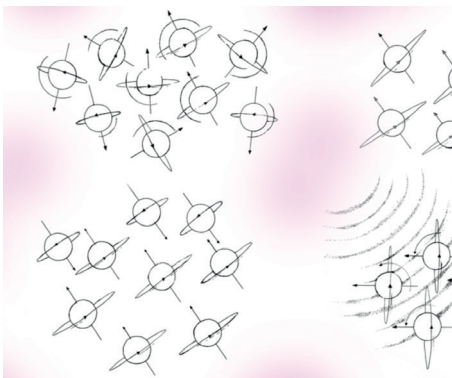
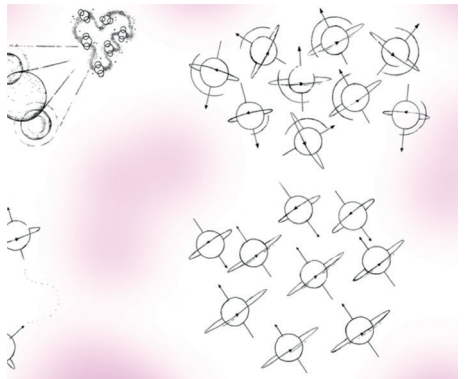
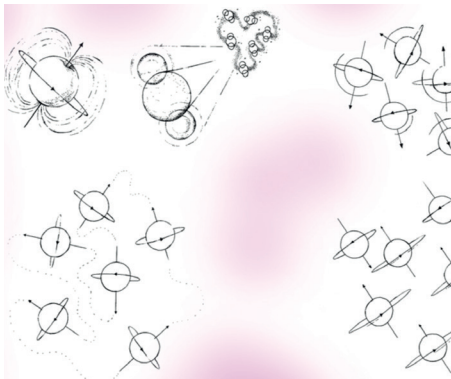
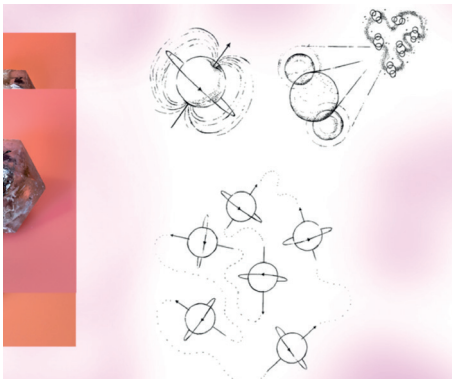
MRI brings us into contact with the body as a patient, a person, a biological environment, pathology, and as an assemblage of biochemical reactions charted by a medical geography. It reminds us that we contain autonomic organs, tissues, cells, molecules, and that we are atomic, and composed molecularly. In other words, the body acts beyond us. Here, I explore MRI through creative practice, using *pan.able* to create an embedded and relational assemblage of my practice, and how it interacts with MRI. My point of departure is to identify interfaces in MRI as “places”, sites or moments where separate entities become connected and where a change in force or informational transfer occurs. During an MRI scan, a powerful magnetic field moves across the body-machine interface, interacting with bodily matter on the subatomic level. The interactions of the scanner result in the protons within the subject emitting radio frequency pulses which are detected and transformed into a digital biomedical image using computational processes.

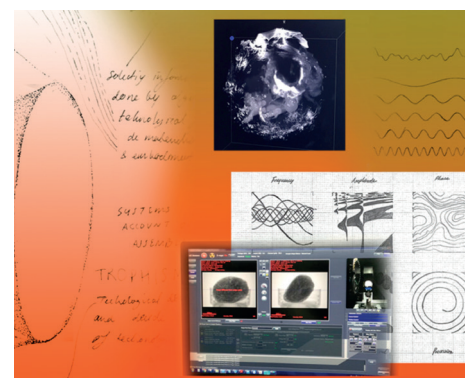
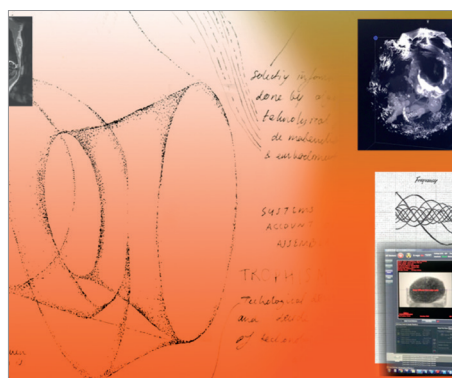
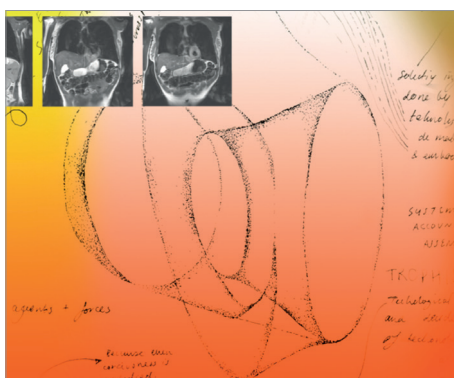
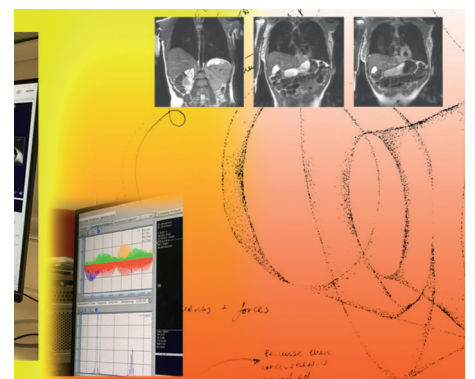
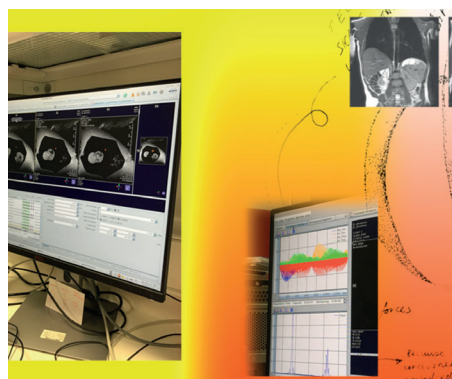
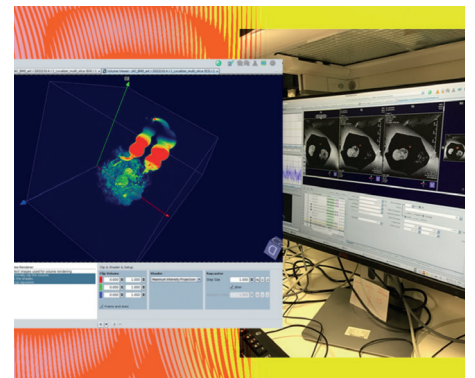
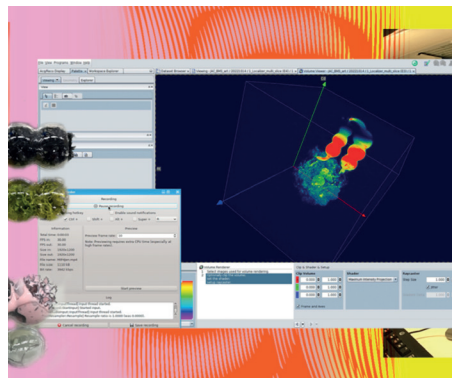
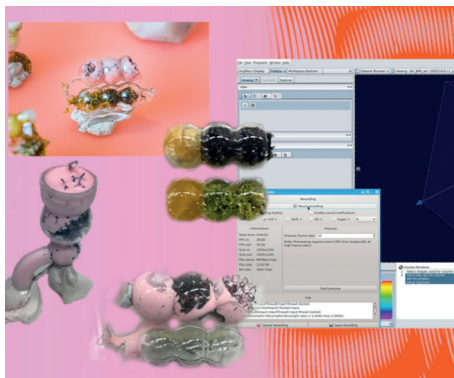
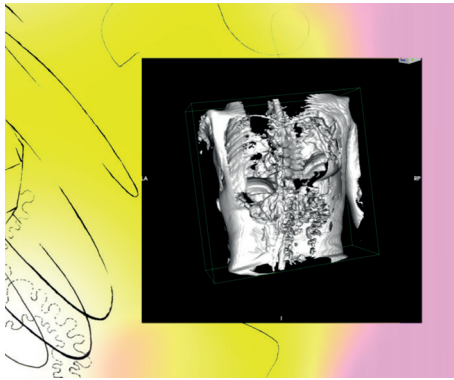
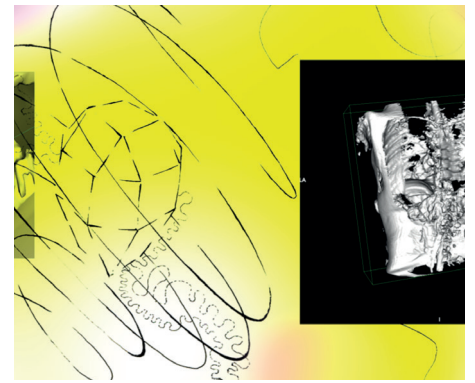
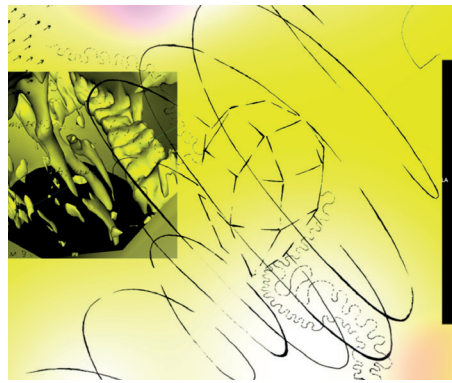
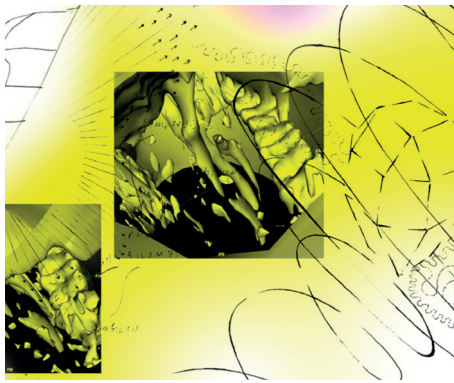
Through a practice of “re-corporealisation”, the art practice described in this article explores corporeality and the philosophical concept of the abject as crucial to our subjectivity. This art project examines the MRI process as partly composed of the body-machine and analogue-digital interfaces resulting in artworks that interact with and emerge from MRI. I created sculptures called phantoms using tissue-mimicking materials (TMMs), named after scientific devices of the same name. Phantoms are used in biomedical imaging as stand-ins for human tissue, and used to calibrate, test, and verify scanning protocols. My sculptural phantoms are materials-led objects made to interact at the body-machine interface and be sensed by MRI.

They are recognized and treated as semi-figurative body proxies and came to inform my understanding of my personal experience of cancer and medical treatment. I scanned my phantoms at the Francis Crick Institute, London and the Future Technology Centre, Portsmouth, where I was able to explore the potential of an art object as a scientific device and create further parity between them and my medical subjectivity.

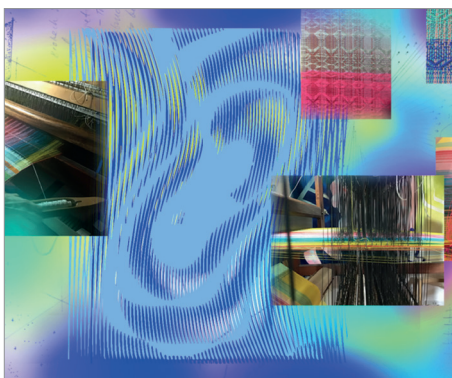
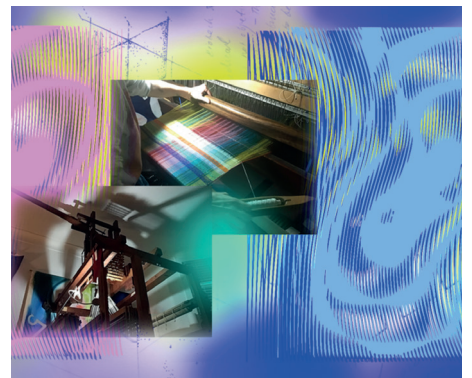
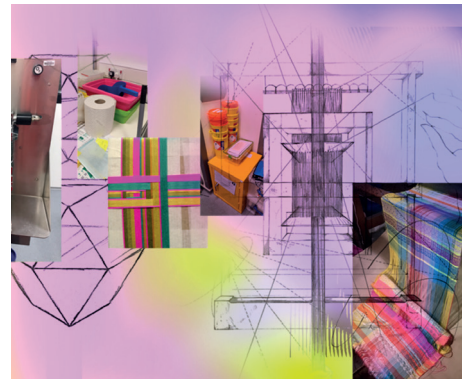
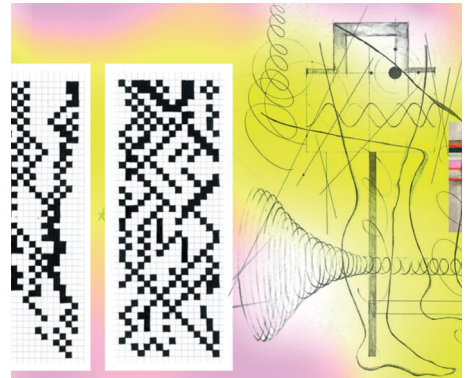
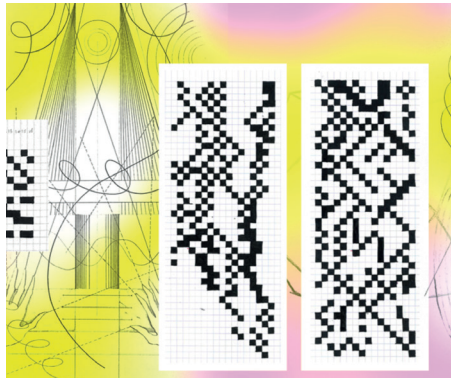
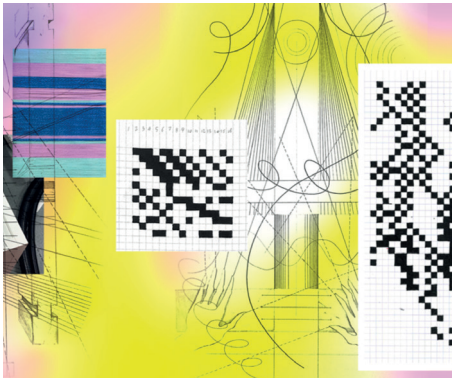
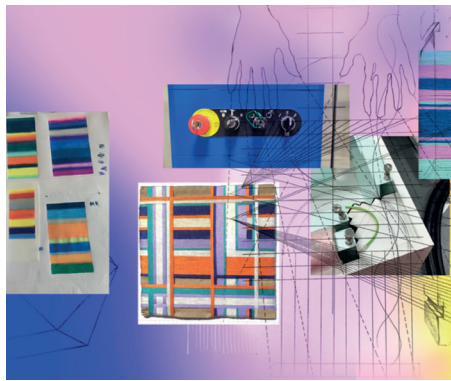
At the analogue-digital interface, I use weaving (also a body-machine interface) to explore how the signals from the body become biomedical images. I analyze and visually represent the different mathematical properties needed to make an MRI image: frequency, amplitude, phase, sequence, precession, signal-to-noise ratio, real and imaginary numbers. By translating these into images, weave drafts, and weaving them into textural patternings, I create re-corporealised, hand-woven deconstructed reconfigurations of the informational transfers that take place at the analogue-digital interface. The shared lineage of the computer and loom helps me to understand and enact how weaving and computational technologies operate. Part of the process or re-corporealisation was to make MRI processes knowable through my own body and my woven work.

MRI makes us aware of different kinds of entanglements: MRI emerges with the body which charts both self and health. Electrons, textiles, signals, TMMs, and movements through the loom are entangled with the phenomenon of corporeal matter, my experience of cancer, and cancer treatment. These entanglements are visualized in my *pan.able* article through interacting layers, transparencies and opacities, overlapping photographic records of my work, photos of the lab, phantom-making, computer screens, stages of weaving, handwritten notes, sketches, and illustrations. Linking and relinking multiple concepts through patches of transparency helped me to convey how multi-scalar entities and systems in my research and practice are entangled, embodied, and embedded.



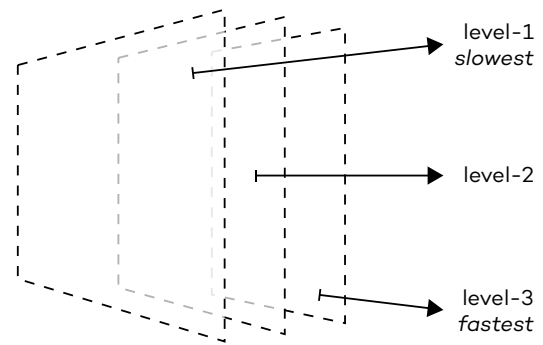






This contribution was published on www.able-journal.org in a pan.able format

www.able-journal.org/en/re-corporealising-mri-data



crédits

author: Jennifer Crouch (PhD), artist and researcher

visual designer: Jennifer Crouch

financial support: University of Portsmouth, CCI Faculty bursary

acknowledgments:

Dr Bernard Siow, MRI Department, Biological Research Facility In Vivo Imaging, Francis Crick Institute, London

Dr Heather Fitzke, Department of Imaging, Division of Medicine, University College London (UCL)

The Eldon Production Centre (EPC), 3D Studios, Faculty of Creative and Cultural Industries, University of Portsmouth

The Future Technology Centre (FTC), University of Portsmouth

Centre for Biomedical Imaging (CABI), University College London (UCL)

Professor Mark Lythgoe CABI, UCL

University of Portsmouth, CCI Faculty bursary

about the author

Jennifer Crouch (PhD) is an art-science multimedia practitioner who moves between sculpture, textiles, drawing, installation, experiences, and painting. They have a background in physics and postgraduate training in medical illustration and have worked as an artist in several labs, and scientific environments.

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to cite this article

Crouch, Jennifer. 2024. “Re-Corporealising MRI data: A Practice-Based Investigation Through Art and Science.” *able journal*: <https://able-journal.org/en/re-corporealising-mri-data>

MLA	EN	Crouch, Jennifer. “Re-Corporealising MRI data: a Practice-Based Investigation Through Art and Science.” <i>able journal</i> , 2024. https://able-journal.org/en/re-corporealising-mri-data
ISO 690	EN	CROUCH, Jennifer. “Re-Corporealising MRI data: a Practice-Based Investigation Through Art and Science.” <i>able journal</i> [online]. 2024. Available from: https://able-journal.org/en/re-corporealising-mri-data
APA	EN	Crouch, J. (2024). Re-Corporealising MRI data: A Practice-Based Investigation Through Art and Science. <i>able journal</i> . https://able-journal.org/en/re-corporealising-mri-data
DOI	EN	https://doi.org/10.69564/able.en.23021.mridata