Artscience Thinking for the Global South

The International Society for Education through Art
Connecting ways of thinking: Intersections of Art and Science to consider inclusion
2023 February 22

Diego S. Maranan, PhD
Associate Professor and Dean, Faculty of Information and Communication Studies,
University of the Philippines - Open University
dmaranan@upou.edu.ph
Co-Founder, Space Ecologies Art and Design (SEADS)
https://seads.network/member/diego

Projects

Biomodd

Dama (via Haplos)

Wearable Futures

Science by Way of Art



Computing science + Contemporary dance / theater

Pluridisciplinary Research in Art + Humanities + Science + Technology

COGNOVO HOME ABOUT + PROJECTS + PEOPLE + NEWS EVENTS CONTACT

#1

VALUE JUDGMENTS AND CREATIVE THINKING

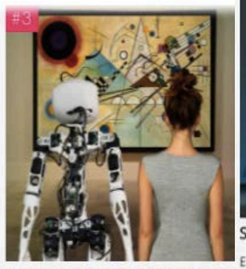
Investigate the role of value based decision making in creative cognition. (more)

#2

CREATIVITY IN DECEPTIVE COMMUNICATION

Compare the roles of creativity and visual imagery in honest and deceptive communication, using behavioural and cognitive neuroscience methods and paradigms. (more)

#3



MODELLING CREATIVE DECISION MAKING

Investigate aesthetic pleasantness in the visual domain, in an inter-disciplinary manner. (more)

#7

SHARED CREATIVITY IN DANCE

Exploring the roles of flow experience and metacognitive strategies: imagery and sense awareness in group creativity in dance improvisation. (more)

#8

BODYSHAPING THE MIND

Designing technologies and aesthetic experiences to support embodied cognition. (more)

#9

DESIGNING PLAYFUL SYSTEMS IN MIXED REALITY

Investigate the nature of play in a practice-based manner by designing and developing playful systems in mixed reality. (more)

#15

PREDICTING CREATIVITY FROM SPATIAL ABILITY & PERSONALITY

Investigate the neurobiological basis for creativity, exploring how biological tendencies or temperament may shape the creative personality. (more)

#16

UNCONSCIOUS CREATIVITY: THE EUREKA MOMENT

Investigate the 'Eureka' moment, using experimental observations of unconscious problem solving in architectual design (more)

#17

SCHEMATA AND THEIR APPLICATIONS

Build a neural system that learns a conceptual hierarchy of (sound-)objects, autonomously searches the underlying conceptual space, and presents the retrieved associative concept-sequence audio-visually (more)

#4

NEURALLY INSPIRED ALGORITHMS OF HUMAN COGNITION AND PROBLEM SOLVING

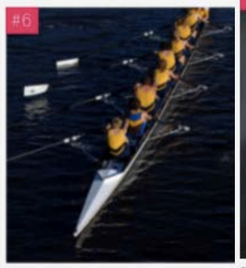
Explore the neurophysiological basis of generative creative processes, using realistic

#5

INDIVIDUAL DIFFERENCES IN VISUAL AND AUDITORY BISTABILITY

Investigate the relationships between switching rates in multistable perception, executive functions, creativity and personality

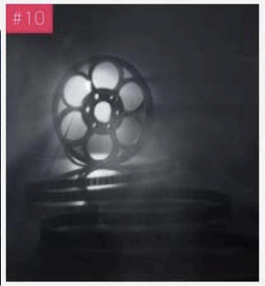
#6



CREATIVITY THROUGH SOCIAL INTERACTION

Investigate how creative products emerge through interactions in collaborative teams, and how inter-individual and social abilities

#10



EARLY CINEMA AND COGNITIVE CREATIVITY

Investigate the cognitive impact of analogue and digital cinematic film projection technologies. (more)

#11

DEVELOPING CREATIVITY IN COGNITIVE ROBOTS

I aim to build robots capable of insight using Hierarchical Reinforcement Learning. (more)

#12

SIGNS OF ALARM FATIGUE

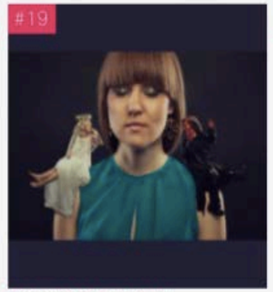
Investigates the cognitive-behavioural correlates of the subjective experience of 'alarm fatigue'. (more)

#18

THE ROLE OF COUNTERFACTUAL THINKING IN DECEPTION

Investigate how people use alternatives to reality in order to deceive whilst also examining the mechanisms that underlie this

#19



MORAL COGNITION: AN INTERDISCIPLINARY INVESTIGATION OF JUDGEMENT VERSUS ACTION

Investigating the role of personality traits and arousal factors on moral decision making and the moral action and judgement disparity.

#20

ATTENTION, ASSOCIATIVE LEARNING AND CREATIVITY

Exploring learning about non-informative cues and how this relates to measures of creative thinking. (more)

COGNOVO

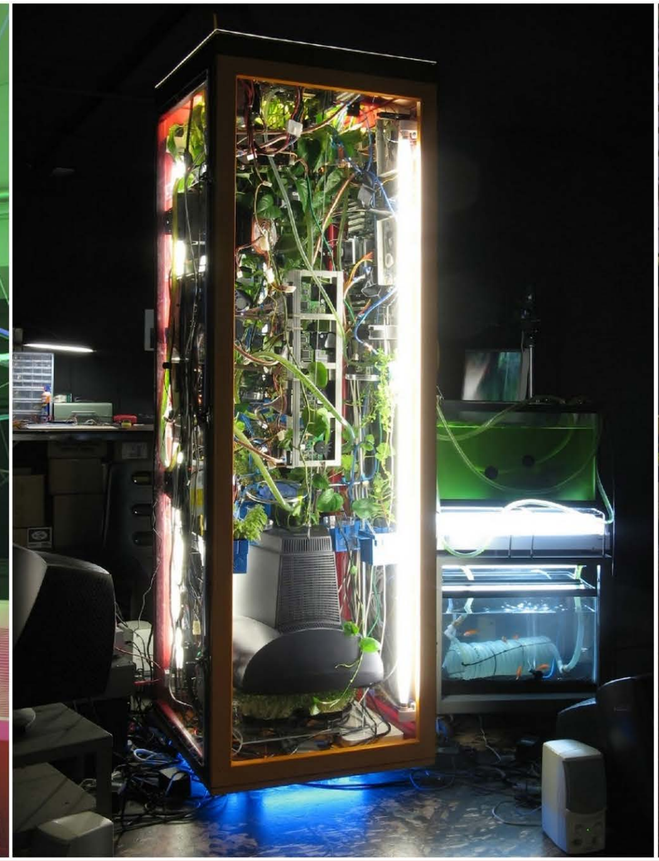
MARIE CURIE ACTIONS

UNIVERSITY OF PLYMOUTH

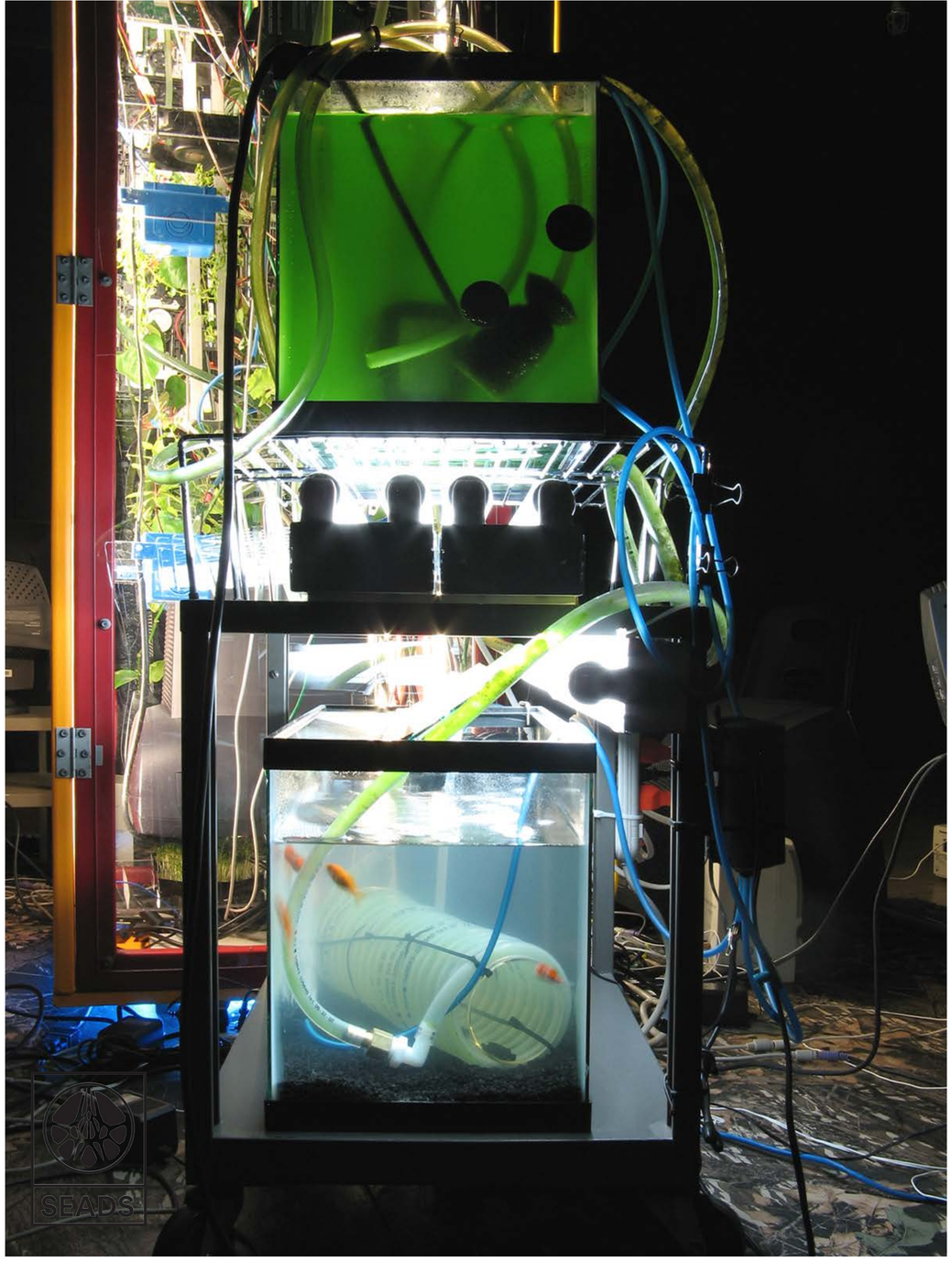
www.seads.network

Biomodd






https://seads.network/hyperproject/biomodd

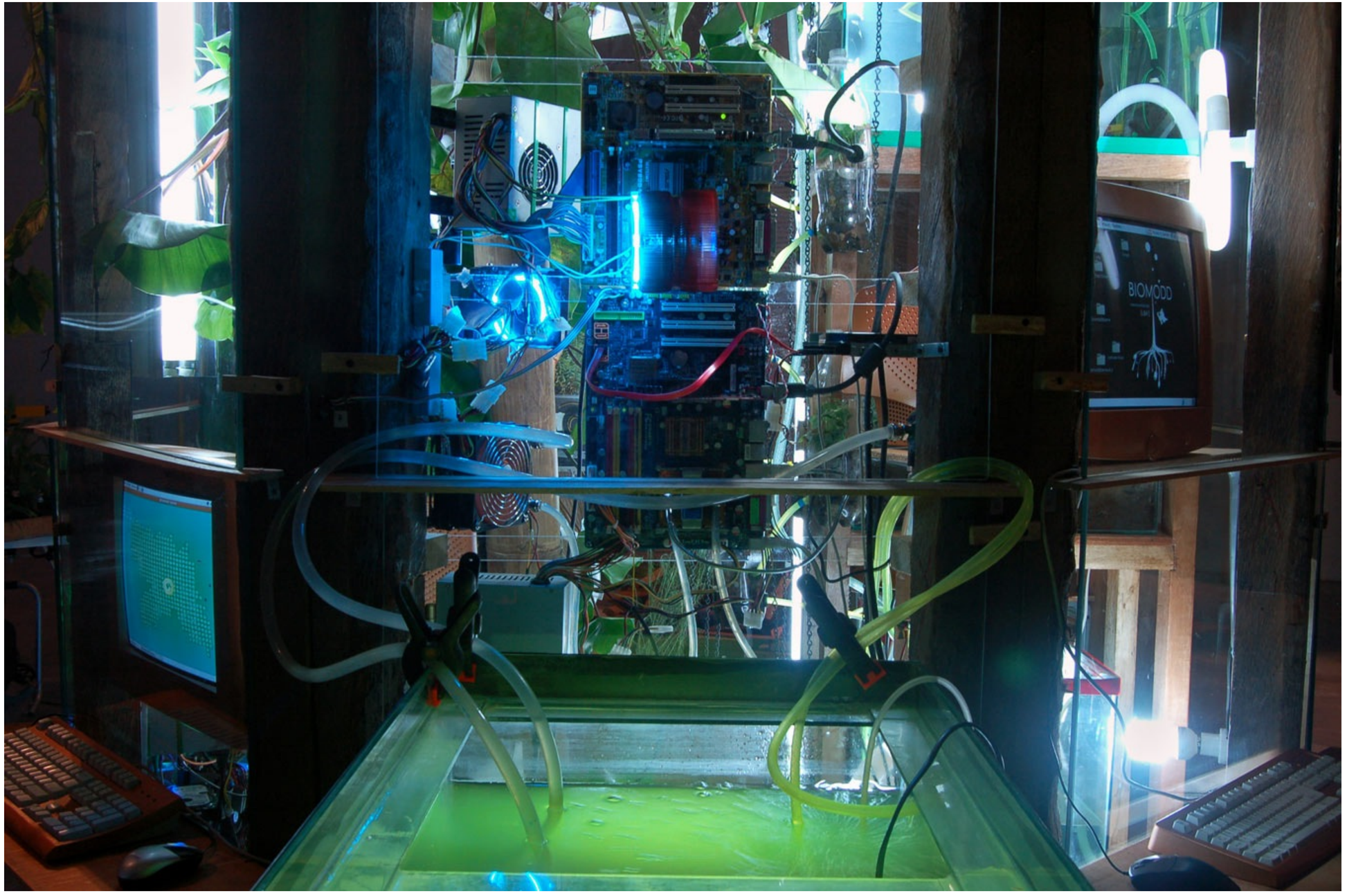


Biomodd [ATH[1]]

https://seads.network/hyperproject/biomodd

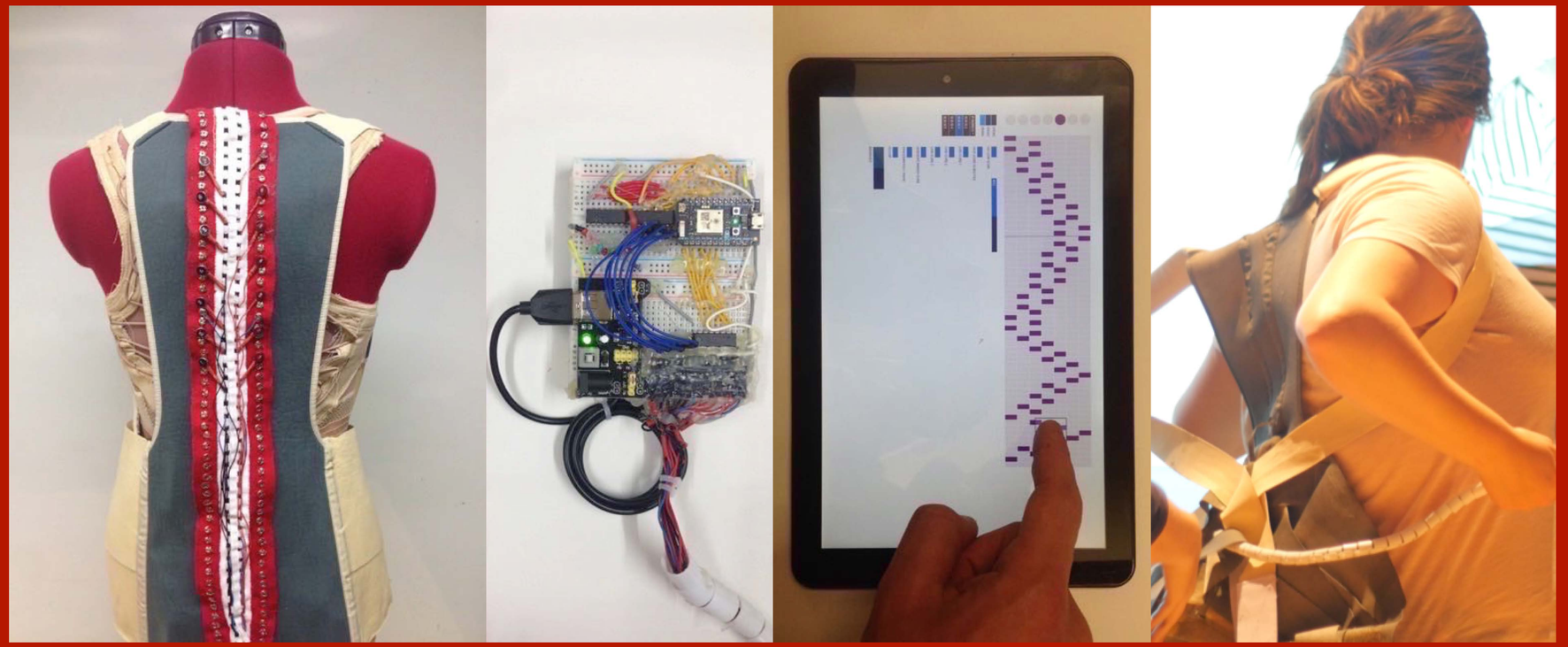
Biomodd [LBA^2]

https://seads.network/hyperproject/biomodd



https://seads.network/hyperproject/biomodd

Haplós



https://seads.network/project/haplos

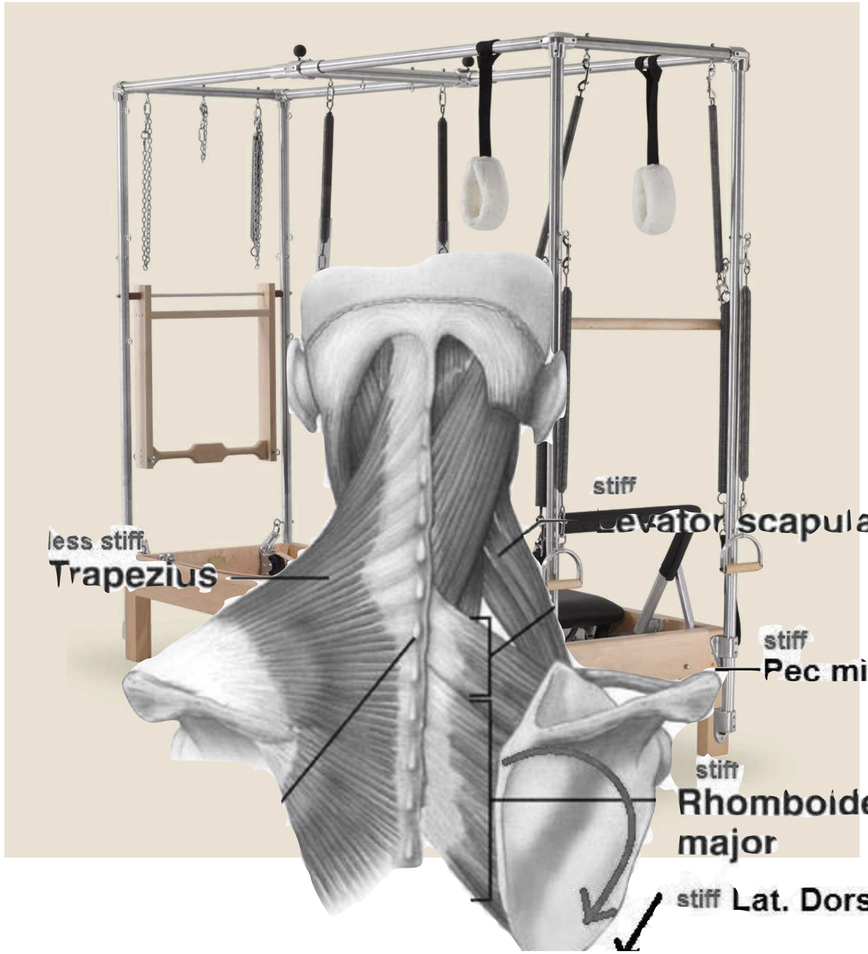
Dancerly knowledge: The *soma*

- The “living, self-sensing, internalized perception of oneself [that] is radically different from the externalized perception of what we call a ‘body’” (Hanna, 1988, p. 20)
- The body as experienced from within

https://seads.network/project/haplos

Transformative somatic experiences

Reorganizing neuromuscular habits



- Differentiating between areas of the shoulder, neck, and chest
- Finding movement in the shoulders
- Finding movement in the chest
- Finding new movement in the neck, head, and eyes
- Seeing and relating to the world differently

Transformative somatic experiences

Somatic costumes (Dean, 2014)

https://seads.network/project/haplos

Transformative somatic experiences

Somatic techniques, e.g., the Feldenkrais Method (Rywerant, 2003; Feldenkrais, 1972)

Functional Integration lesson

Awareness Through Movement lesson

Transformative somatic experiences

The Feldenkrais Method

- Pain (Lundblad et al, 1999; Lundqvist et al., 2014)
- Self-regulation (Ives, 2003)
- Interoceptive awareness (Paolucci et al., 2016)
- Quality of life in individuals with degenerative neuromuscular disease (Teixeira-Machado et al., 2015)

Transformative somatic experiences

The Feldenkrais Method

"a short, non-intrusive sensorimotor intervention (based on the Feldenkrais Method) can have short-term effects on spontaneous cortical activity in functionally related brain regions"

Verrel, J., Almagor, E., Schumann, F., Lindenberger, U., & Kühn, S. (2015). Changes in neural resting state activity in primary and higher-order motor areas induced by a short sensorimotor intervention based on the Feldenkrais method. Frontiers in Human Neuroscience, 9. http://dx.doi.org/10.3389/fnhum.2015.00232

https://seads.network/project/haplos

Can technology facilitate transformative somatic bodily experiences?

https://seads.network/project/haplos

Technology design with/for the soma

Sarka: Sonification and Somaesthetic Appreciation Design

Ilias Bergström
Mobile Life @ KTH
100 44 Stockholm, Sweden
iliasb@kth.se

Martin Jonsson
Södertörn University
141 89 Huddinge, Sweden
martin.jonsson@sh.se

ABSTRACT
We often take for granted that we have immediate access to our perception and experience of and through our bodies. But inward listening is a demanding activity and thus not easy to learn to perform or design for. With the Sarka mat we want to support the ability to direct attention by providing sound feedback linked to the weight distribution and motion intensity of different parts of the body, and to provide an exemplar for how such design may be conducted. The process of Sarka's creation is informed by Somaesthetic Appreciation Design. We discuss how a sonic feedback signal can influence listeners, followed by how we, in this design, worked to navigate the complex design space presented to us. We detail the design process involved, and the very particular set of limitations which this interactive sonification presented.

Author Keywords
Somaesthetics; Sonification; Carpet; Biofeedback; Feldenkrais; Somatic Appreciation Design; Somatic practices.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION
This article details the creation of the Sarka mat: the design process involved, and the particular set of limitations this interactive sonification [13] presented. With Sarka the small movements and weight distribution of a person in supine position are interactively sonified, from the real-time data captured by 8 piezoresistive force sensors distributed across two wooden sections under the person's torso and pelvis. We often take for granted that we have immediate access to our perception and experience of and through our bodies. But inward listening is a demanding activity and thus not easy to design for. With the Sarka mat (Figure 1) we want to support the ability to direct attention by providing sound feedback of the weight distribution and motion intensity of different parts of the body. Our intention is to create a sonic feedback device that can serve as an alternative or complement to existing somatic practices and body awareness practices. Its[1] creation is a result of our continuing exploration on how somaesthetic theory can serve as theoretical foundation for design of technologies on or around the body. The Somaesthetics theory explores somatic practices and demonstrates how they can lead to the attainment of fulfilling experiences [29]. The process of Sarka's creation is informed by Somaesthetic Appreciation Design [14]. Briefly, it addresses how we can translate somaesthetic theory to design, opening up a design space where the interaction subtly supports users' attention inwards, towards their own body, enriching their sensitivity to, enjoyment and appreciation of their own somatics. This previous work proposes four main qualities that are essential when designing for somaesthetic appreciation: using subtle guidance of attention, providing a space for reflection, creating intimate correspondence, and encouraging the articulation of the experience. We will further expand upon somaesthetic appreciation design, and keep referring back to it throughout the article, to connect to how it has informed our design choices.

Figure 1 - Illustration of Sarka. The sewn patterns help align the body of the person lying down with the sensors underneath the mat. Cabling and speakers/headphones are not shown.

MOCO'16, July 05 - 07, 2016, Thessaloniki, GA, Greece

ACM 978-1-4503-4307-7/16/07$15.00
DOI: http://dx.doi.org/10.1145/2948910.2948922

Vibrotactile and Vibroacoustic Interventions into Health and Well-Being

Ann Morrison[1], Cristina Manresa-Yee[2] and Hendrik Knoche[1]

[1]Department of Architecture, Design and Media Technology, Aalborg University Rendsburggade 14, 9000, Aalborg, Denmark

[2]Department of Mathematics and Computer Science, Universitat de las Illes Balears, Crta. Valldemossa km 7.5, 07122, Palma, Spain

Corresponding author: Ann Morrison (e-mail: morrison@create.aau.dk, phone: +45 25 52 00 73, fax: + 45 9815 4522)

Abstract

Purpose: We designed a vibrotactile vest with physiological monitoring that interacts with a vibroacoustic urban environment, *The Humming Wall*. We structured vibrotactile patterns and built a vibrotactile language to convey information and to interact towards and from the vibroacoustic environment in order to elicit sensations and encourage particular body movements. The patterns were structured to emulate calming and activating sensations and to guide or warn the vest wearer. In addition, actions such as swiping or knocking on the wall were replicated on the vest for the vest wearer, and participants could 'feel' (vibroacoustically) and hear their own heartbeats and breath rates at the wall. **Methods:** A field trial with 39 participants was conducted over a 5-week period in an urban park. Participants wearing the vest completed a set of defined tasks. We logged use and responses, videoed all activities, and conducted interviews and questionnaires post-experiment. **Results:** The results depicted the participants' experience, engagement and impressions while wearing the vibrotactile vest and interacting with the wall. The findings show convincing, strong and positive responses to novel interactions between the responsive vibroacoustic environment and the vibrotactile vest. We found compelling evidence to support further exploration into vibrotactile and vibroacoustic solutions for improving health and well-being. **Conclusions:** The work presented demonstrates the capacity for health and well-being solutions with multiple use cases. Additionally, this work constitutes the first field trial with a vibrotactile wearable responding to and driving vibroacoustic displays with an interactive vibroacoustic environment.

Keywords: wearable computing; vibrotactile; healthcare and well-being; The Humming Wall; haptic patterns; vibroacoustic;

the vest wearer and the wall and the other enables interaction between non-vest wearers-to-vest wearers via the wall, as well as interactions for non-vest wearers with the wall itself.

3.1 Vibrotactile vest

Fig. 2. The vibrotactile vest: adjustable harness (a) front and (b) back and (c) outer shell and skirt-apron.

The vest is made of two layers, an inner layer consisting of a one-size-fits all adjustable harness (see Fig. 2a, 2b) and an outer layer consisting of an enclosing vest (see Fig. 2c). The harness houses 32 actuators, moveable to ensure they are placed accurately on each different shaped body. The lower harness fits around the

Re-sensitising the body: interactive art and the Feldenkrais method

Lian Loke*
Design Lab,
Faculty of Architecture, Design and Planning,
University of Sydney,
Sydney, NSW, 2006, Australia
E-mail: lian.loke@sydney.edu.au
*Corresponding author

George Poonkhin Khut
University of Technology Sydney,
Sydney, NSW, 2007, Australia
E-mail: george@georgekhut.com

Maggie Slattery
The Australian Feldenkrais Guild Inc.,
21 Ada Street, Adelaide, SA, 5001, Australia
E-mail: maggieslattery@gmail.com

Catherine Truman
Gray Street Workshop,
Adelaide, SA, 3000, Australia
E-mail: ctsl@senet.com.au

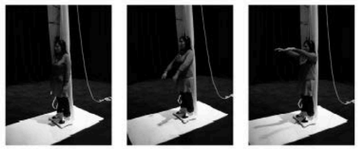
Lizzie Muller
School of Design,
Faculty of Design, Architecture and Building,
University of Technology Sydney,
Sydney, NSW, 2007, Australia
E-mail: lizzie.muller@uts.edu.au

Jonathan Duckworth
School of Media and Communication,
Royal Melbourne Institute of Technology,
Melbourne, VIC, 3000, Australia
E-mail: jonathan.duckworth@rmit.edu.au

of the feet. The lesson describes the movement functionally, aiming to eliminate any cause for participant confusion or concern. Another project member acted as a test subject during this period of development. The ATM lesson evolved through feedback and discernment; for example, the movement of the arms forward and upward, coordinated with eye movement, was added to activate extension, a crucial functional component of this gesture – affecting expressive purpose and whole body motor efficiency.

Figure 5 shows a series of photos of an audience participant in action, annotated with excerpts from the ATM lesson.

Figure 5 A participant listening and moving to the ATM lesson



ATM: ... as you let go of raising your heel and your right heel returns to the board, your weight again is more or less evenly distributed between both of your feet.

And now begin to raise both of your arms ... slowly ... upward, coming forward in front of you, and then upward, gradually toward the ceiling, just as high as you can take your arms easily and comfortably, leaving your gaze softly forward toward the black curtain in front of you.

Come back to raising both of your arms toward the ceiling, and when you are able to see your hands, begin to follow with your eyes as you take your arms upward.

The 'lesson' builds awareness of the organisation of the body in gravity through movement. Through being invited to engage with subtle movement components of the functions of standing, reaching and balance, the participant's attention is directed toward

https://seads.network/project/haplos

Neuroscience of motor action and sensation

Effects of vibrotactile stimuli on cortical representation of motor action

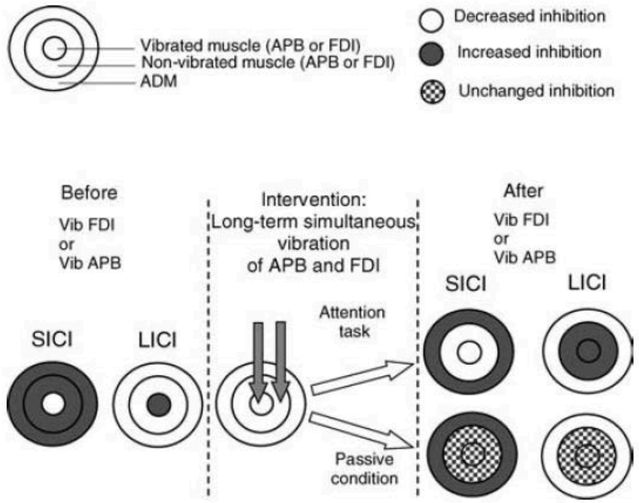


Figure 6. Schematic summary of the effects of focal vibratory input on SICI and LICI in the three hand muscles
In this diagram, the hand muscle representations are drawn as circles with the vibrated muscle (either APB or FDI) in the centre, and the 'near' (either FDI or APB) and 'far' (always ADM) non-vibrated muscles surrounding it. Shades represent the level of intracortical inhibition: white symbolizes a reduction of SICI or LICI, grey an increase, and patterned, an unchanged SICI or LICI compared to the non-vibration condition. Before the intervention (baseline), short-term vibration of one muscle reduces SICI in that muscle ('homotopic' effect) and increases it in other muscles ('heterotopic' effect), as symbolized here by the white centre surrounded by grey for SICI, and vice versa for LICI. After the long-term simultaneous vibration of the APB and FDI, the 'homotopic' effect of vibration spreads onto the co-vibrated muscle if subjects had attended to the vibratory stimulus (attention task). If subjects did not attend, vibration of either FDI or APB no longer had any effect on FDI or APB. The 'heterotopic' effects of short-term APB or FDI vibration on the ADM are preserved.

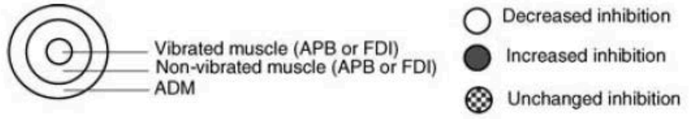
Rosenkranz, K., & Rothwell, J. C. (2003), Rosenkranz, K., & Rothwell, J. C. (2004)

"We conclude that 20 min MSTIM with a frequency of 25 Hz induces outlasting plastic changes in the primary motor cortex. Paired-pulse stimulation further confirms that intrinsic intracortical mechanisms are involved in these changes… These results could be of relevance for hemiplegic patients with motor deficits, to improve the rehabilitation outcome with vibration exercise in combination with motor training."

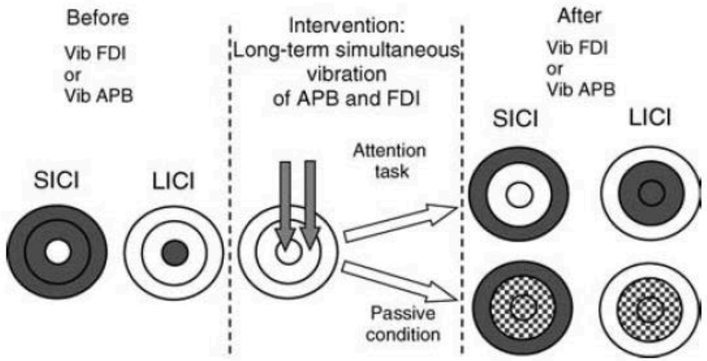
Christova, M., Rafolt, D., Golaszewski, S., & Gallasch, E. (2011).

+

+

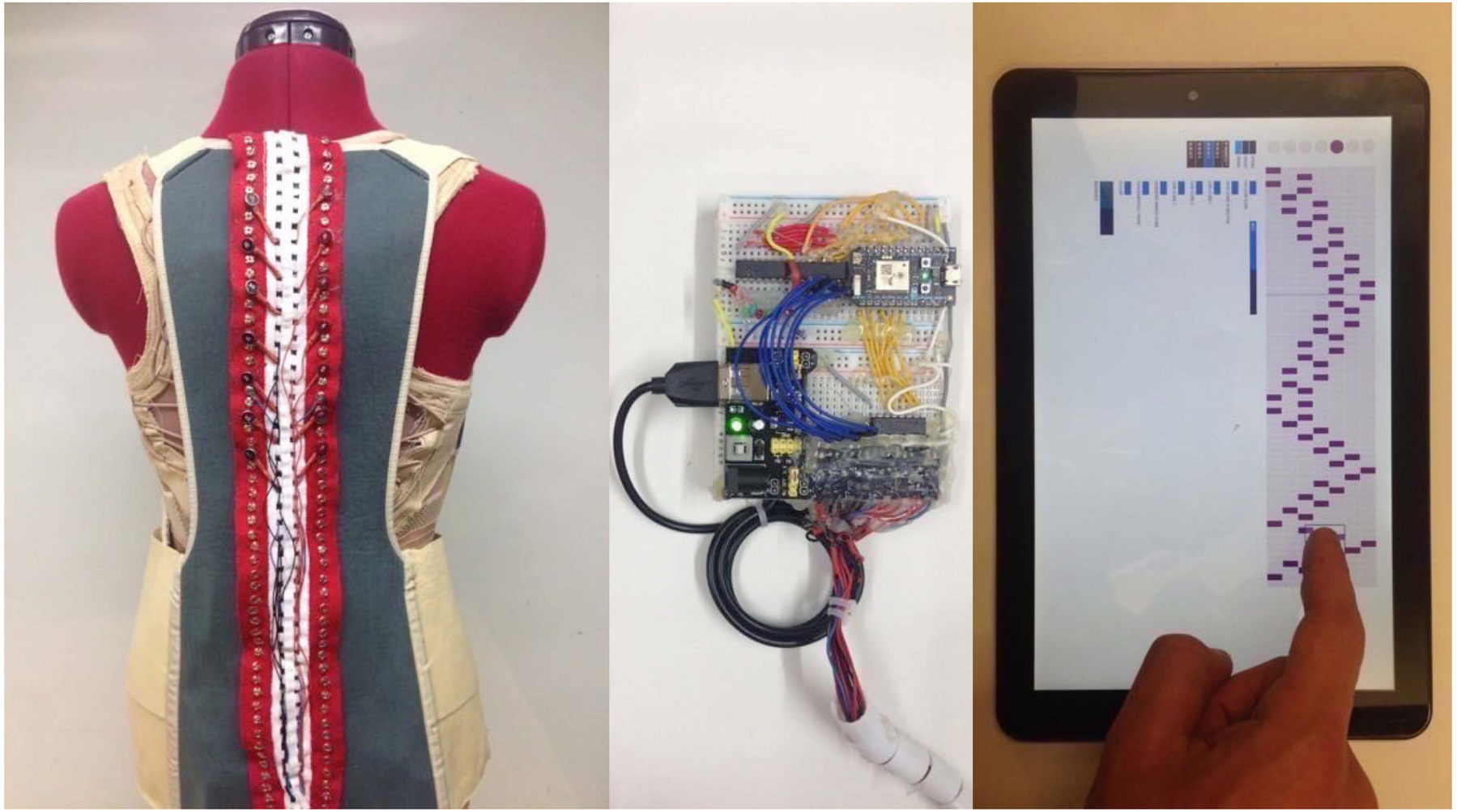

Vibrated muscle (APB or FDI)
Non-vibrated muscle (APB or FDI)
ADM
Decreased inhibition
Increased inhibition
Unchanged inhibition

+


Before
Vib FDI
or
Vib APB
Intervention:
Long-term simultaneous
vibration
of APB and FDI
After
Vib FDI
or
Vib APB
SICI
LICI
Attention
task
SICI
LICI
Passive
condition

= ????

Haplós (“gliding touch”)

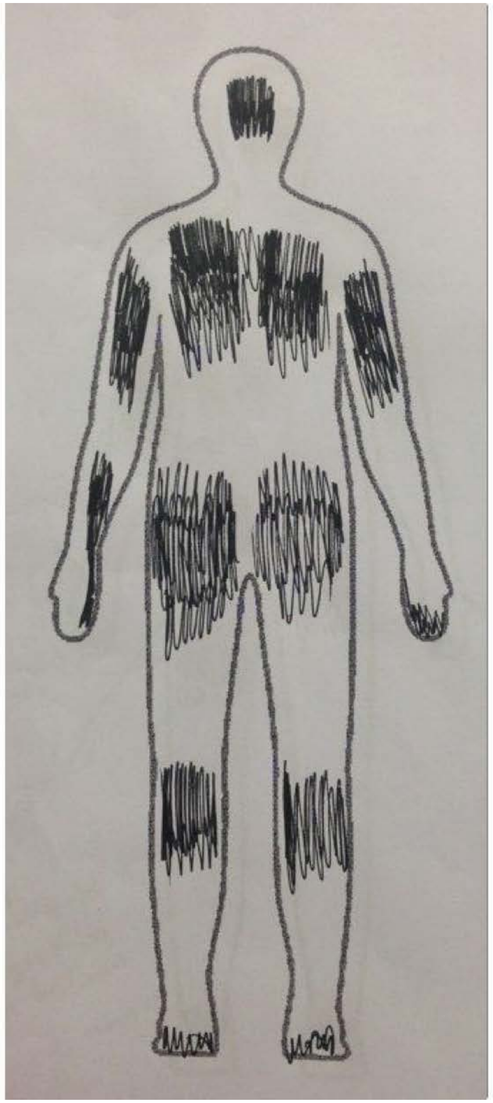


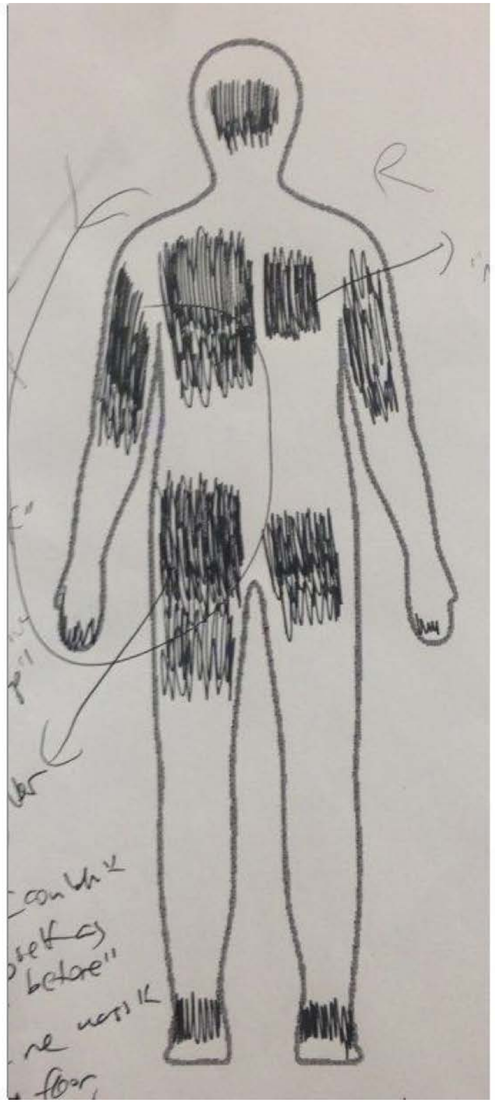
(Maranan et al., 2020)

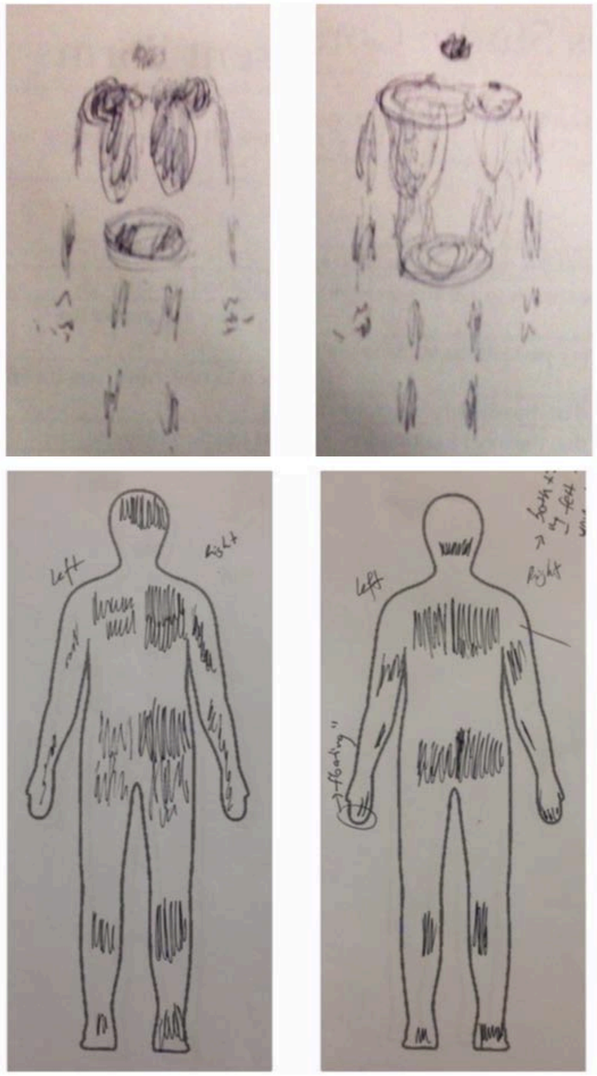
Design testing

Public engagement workshops and events

Haplós







Haplós

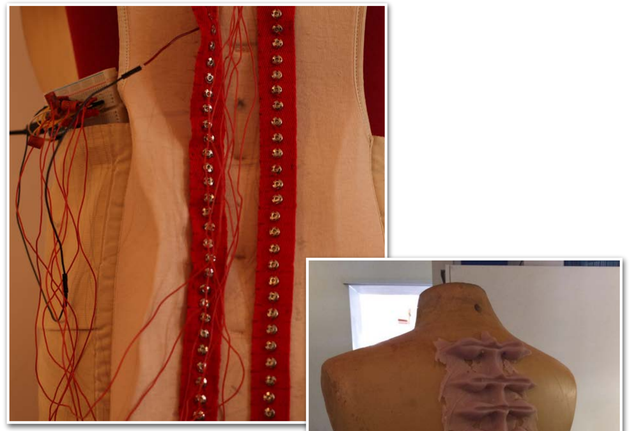
“[I could] feel more of myself ... I couldn’t feel myself as much before.“ (#P22.161022.PublicDemo.a5)

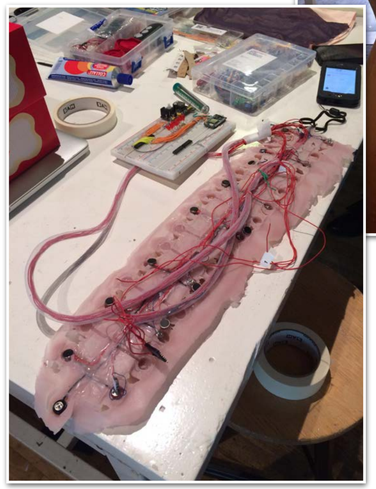
“Definitely felt more sensation/awareness of this particular spot... I just notice my back a lot more from doing that” (#P10.161020.Manufactory1.a5)

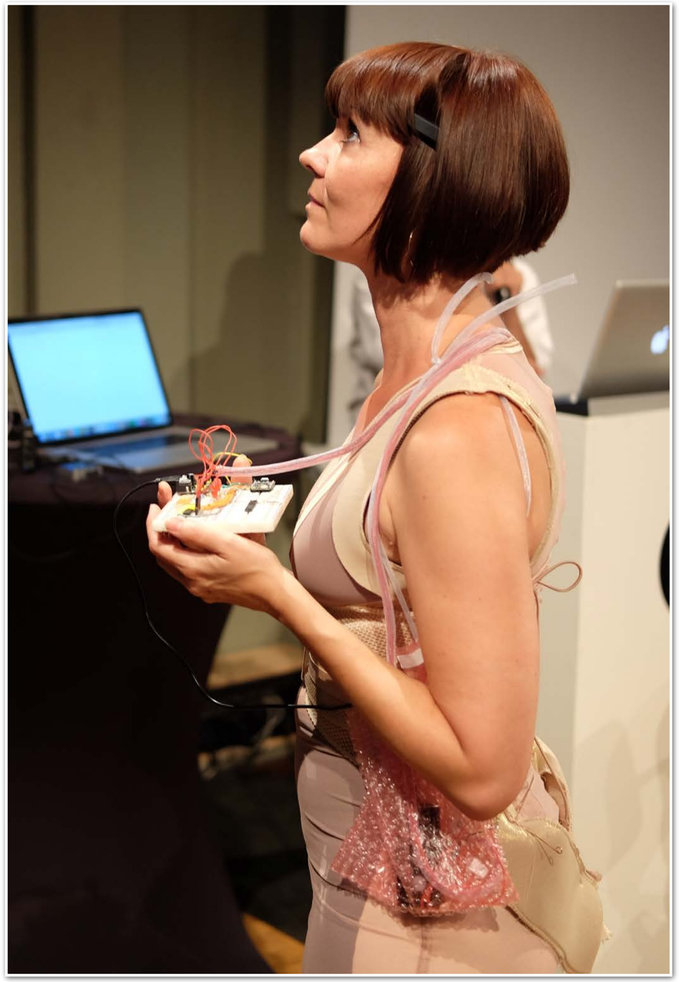
"Was slightly more aware of my left side than i was beforehand... i was more sensitive to its location and which parts were making contact with the floor. so if anything, the resolution with which i can feel my back increased. i feel like i have a sharper image.” (#P14.161020.Manufactory1.a5)

Bisensorial (Hack the Brain 2016, Amsterdam)

Individualised neuroadaptive therapies

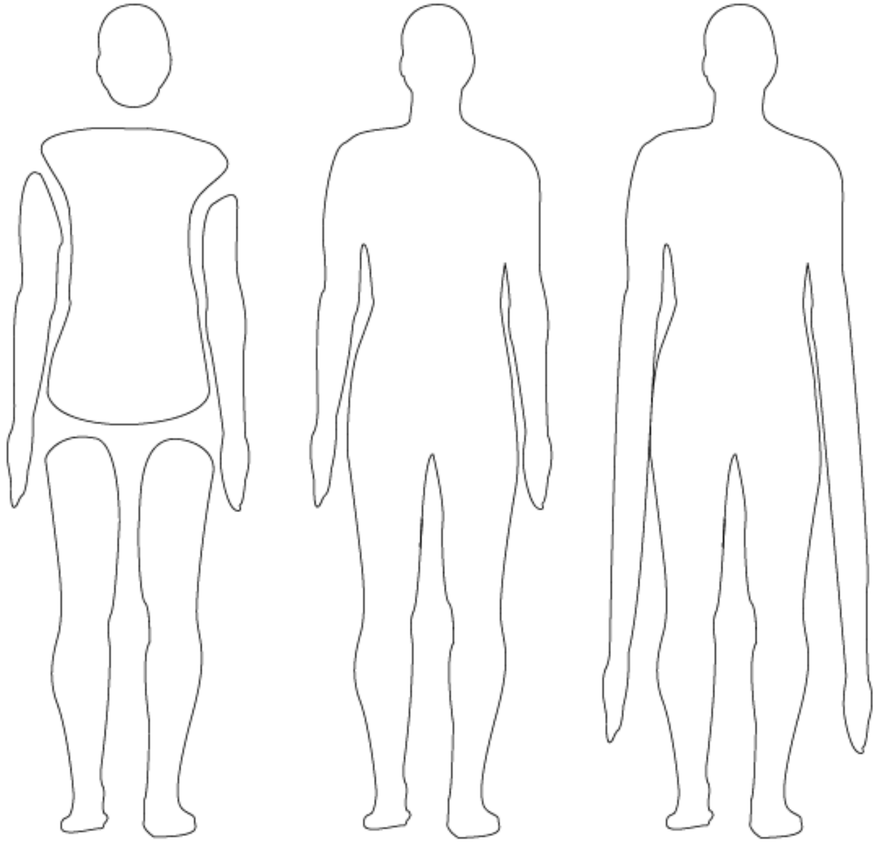






RE/ME (SwissNex San Francisco, 2018)

Reshaping body self-image through touch and sound

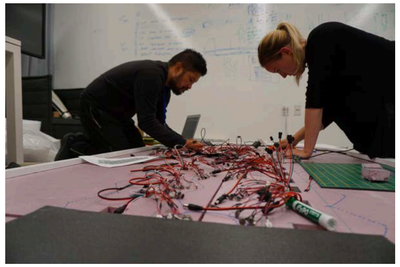


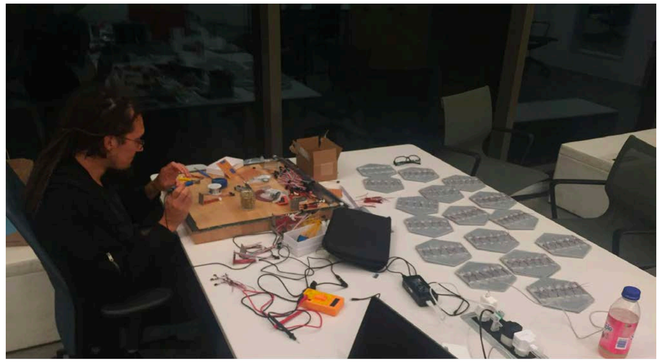
RE/CONNECT : RE/IMAGINE

BODILY WELL-BEING
BODILY CREATIVITY

RE/ME

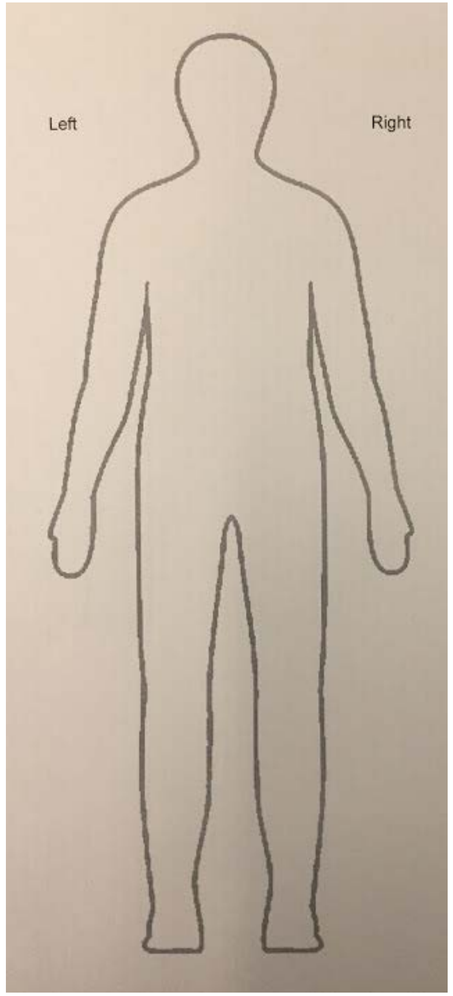
Reshaping body self-image through touch and sound

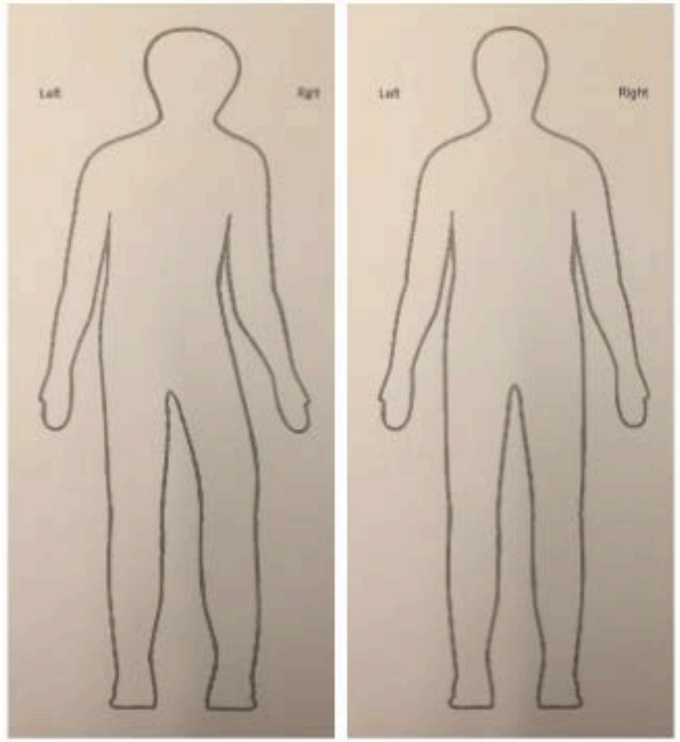




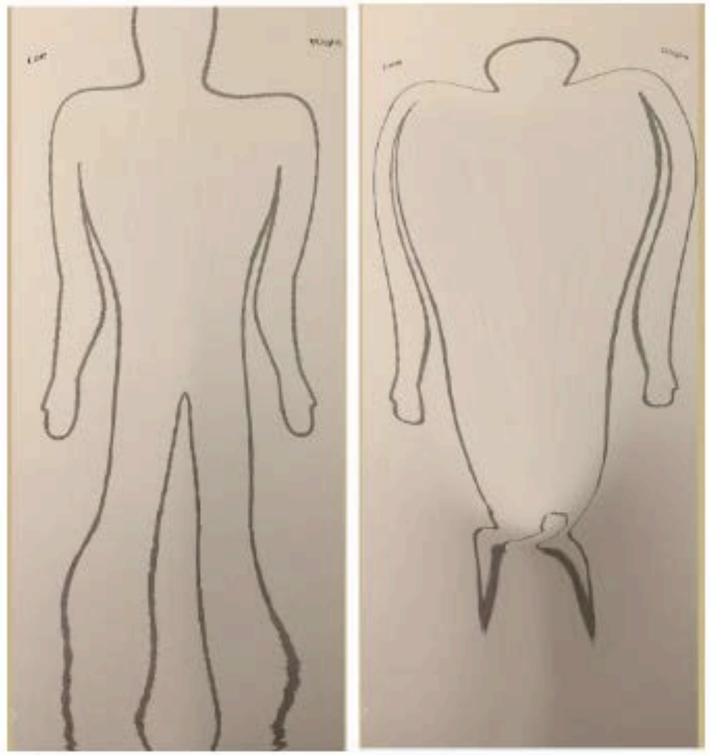
RE/ME

Reshaping body self-image through touch and sound





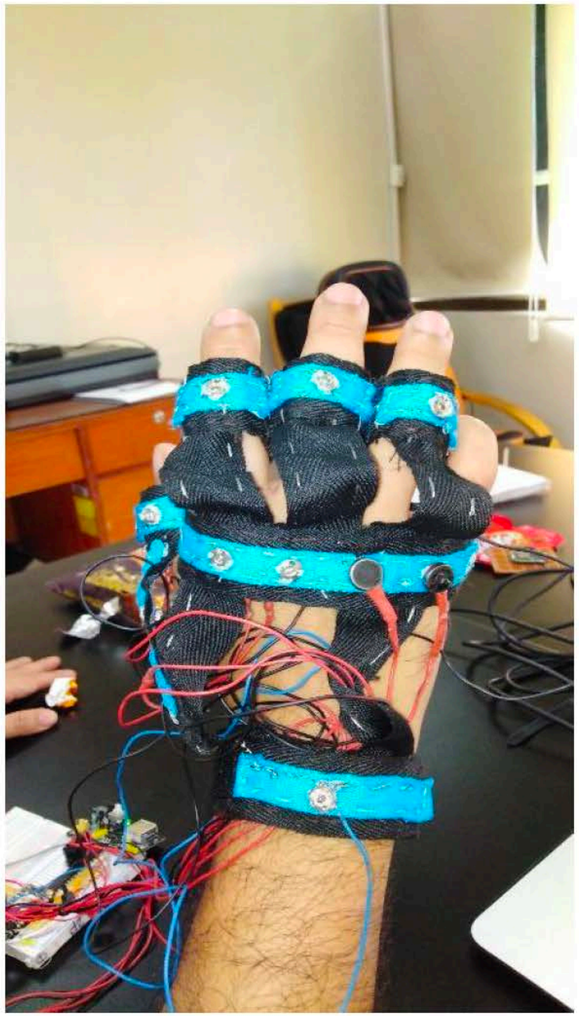
Before and after (example 1)



Before and after (example 2)

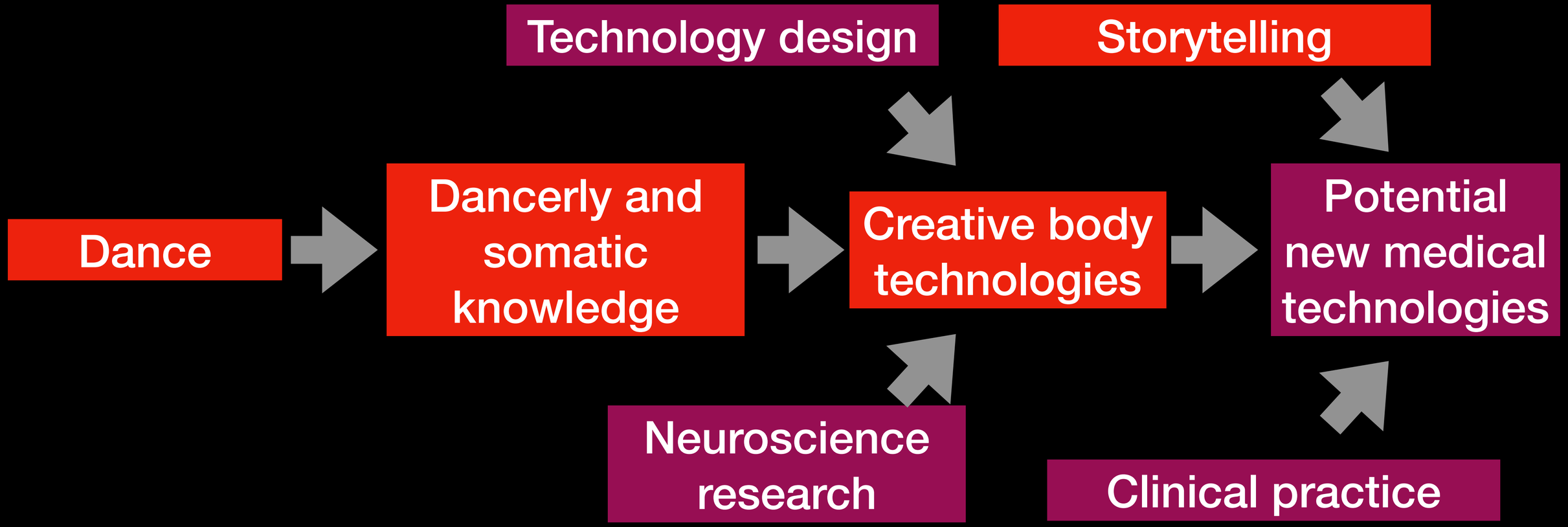
Dama

Multimodal stimulation for sensorimotor rehabilitation



(Reyes and Maranan, 2019)

From art to science (to art to science to…)



Science by Way of Art

Do any of the following statements ring true for you?

I am an artist in the Philippines who

collaborates / has collaborated with science and technology researchers and practitioners; **or**

incorporates scientific and technological research into my artistic / creative work; **or**

is involved in other kinds of art-science collaborative projects.

I am a scientist in the Philippines who

collaborates / has collaborated with artists when conducting research projects; **or**

uses scientific methodologies for research in or practice involving the arts and humanities; **or**

is involved in other kinds of science-art collaborative projects.

My background is in the arts and humanities...

... but my work in the Philippines has impact on scientific knowledge or practice.

If yes, we would love to learn more about your work.

Draft Version: v1.20220701

The Value of the Arts and Humanities to Science in the Philippines:

A report to the British Council on The Creative Turn in the Sciences project

Prepared by:
Diego S. Maranan
Associate Professor, University of the Philippines Open University
Co-founder, Space Ecologies Art and Design
diego@seads.network

With contributions by Franchesca Casauay and Patricia Calora

eative industries 5
8
, and Recommendations 10
the sciences and the arts 12
12
l normal science 13
14
engagement 15
16
18
res" 18
19
ngagement between the arts and 20
enabled artscience practice and
research in / for the Philippine context 21
2.3.1. About CogNovo 23
2.3.2. Haplós: Cognitive Science x Contemporary Dance x Wearable Technology Design 24
2.3.3. To infinity and beyond: space science and space exploration though the

ones such as multidisciplinary, interdisciplinary, and transdisciplinary (amongst others). While these terms are frequently used interchangeably and without specific definitions, there are differences in their intended meanings. Multidisciplinarity draws on information from several disciplines while remaining within disciplinary limits; interdisciplinarity both unites and synthesises links between disciplines to form a coherent whole ; and transdisciplinarity brings disciplines together in new contexts, transcending any
s. Figure 4—taken from a previous publication of
ions.[7] This model for pluridisciplinarity was
ent with CogNovo, an artscience programme at
he UK; I expound on this topic in the next section.

multidisciplinarity, interdisciplinarity, and ces of multiple disciplinarity. From Torre et al (2018).

ng: A case study on UK-enabled nd research in/for the Philippine

d by a long-standing personal interest in creative
e arts and humanities that have led or can lead to

were previously published in Torre et al., 2018.

Science By Way of Art

Exploring collaborations between the arts and the sciences in the Philippines

#sciart #art-science #interdisciplinary #transdisciplinary #pluridisciplinary

Do any of the following statements ring true for you?

I am an artist in the Philippines who

collaborates / has collaborated with science and technology researchers and practitioners; **or**

incorporates scientific and technological research into my artistic / creative work; **or**

is involved in other kinds of art-science collaborative projects.

I am a scientist in the Philippines who

collaborates / has collaborated with artists when conducting research projects; **or**

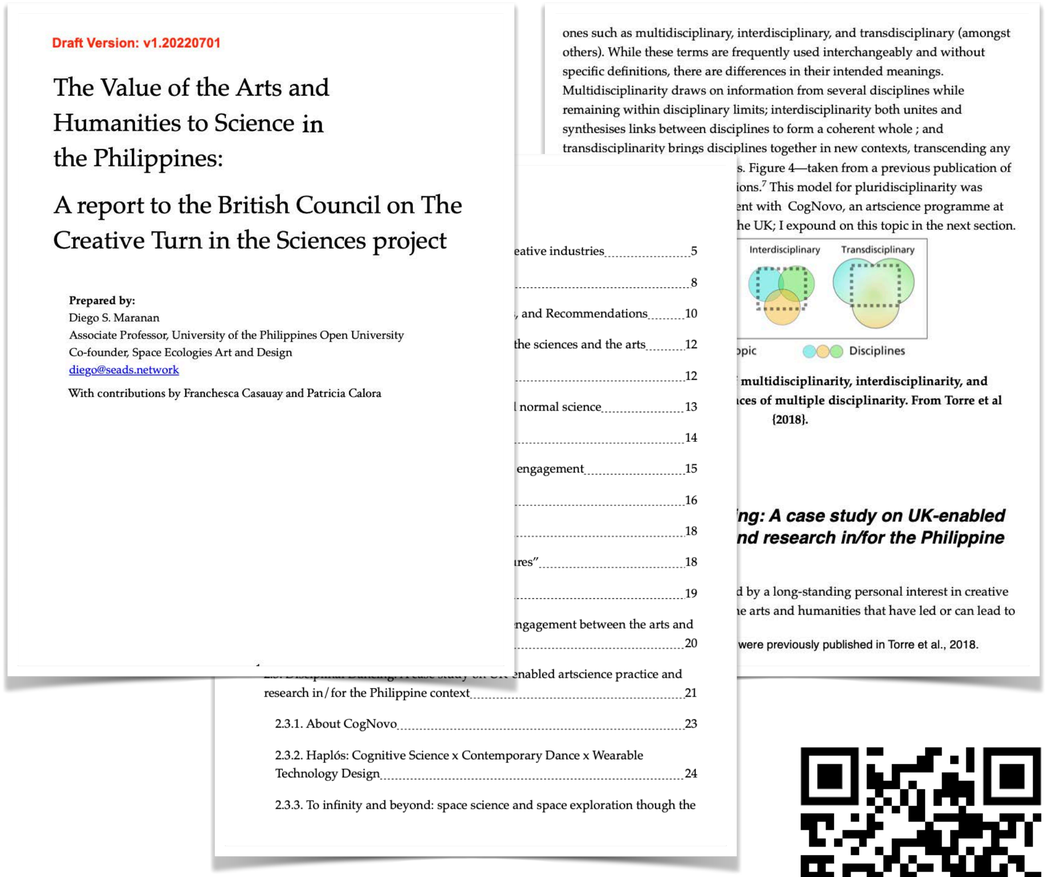
uses scientific methodologies for research in or practice involving the arts and humanities; **or**

is involved in other kinds of science-art collaborative projects.

My background is in the arts and humanities...

... but my work in the Philippines has impact on scientific knowledge or practice.

If yes, we would love to learn more about your work.


Draft Version: v1.20220701

The Value of the Arts and Humanities to Science in the Philippines:

A report to the British Council on The Creative Turn in the Sciences project

Prepared by:
Diego S. Maranan
Associate Professor, University of the Philippines Open University
Co-founder, Space Ecologies Art and Design
diego@seads.network

With contributions by Franchesca Casauay and Patricia Calora

eative industries ... 5
... 8
, and Recommendations ... 10
the sciences and the arts ... 12
... 12
l normal science ... 13
... 14
engagement ... 15
... 16
... 18
ires" ... 18
... 19
ngagement between the arts and ... 20
enabled artscience practice and research in/for the Philippine context ... 21
2.3.1. About CogNovo ... 23
2.3.2. Haplós: Cognitive Science x Contemporary Dance x Wearable Technology Design ... 24
2.3.3. To infinity and beyond: space science and space exploration though the

ones such as multidisciplinary, interdisciplinary, and transdisciplinary (amongst others). While these terms are frequently used interchangeably and without specific definitions, there are differences in their intended meanings. Multidisciplinarity draws on information from several disciplines while remaining within disciplinary limits; interdisciplinarity both unites and synthesises links between disciplines to form a coherent whole ; and transdisciplinarity brings disciplines together in new contexts, transcending any ... s. Figure 4—taken from a previous publication of ... ions.[7] This model for pluridisciplinarity was ... ent with CogNovo, an artscience programme at ... he UK; I expound on this topic in the next section.

... multidisciplinarity, interdisciplinarity, and ...ces of multiple disciplinarity. From Torre et al (2018).

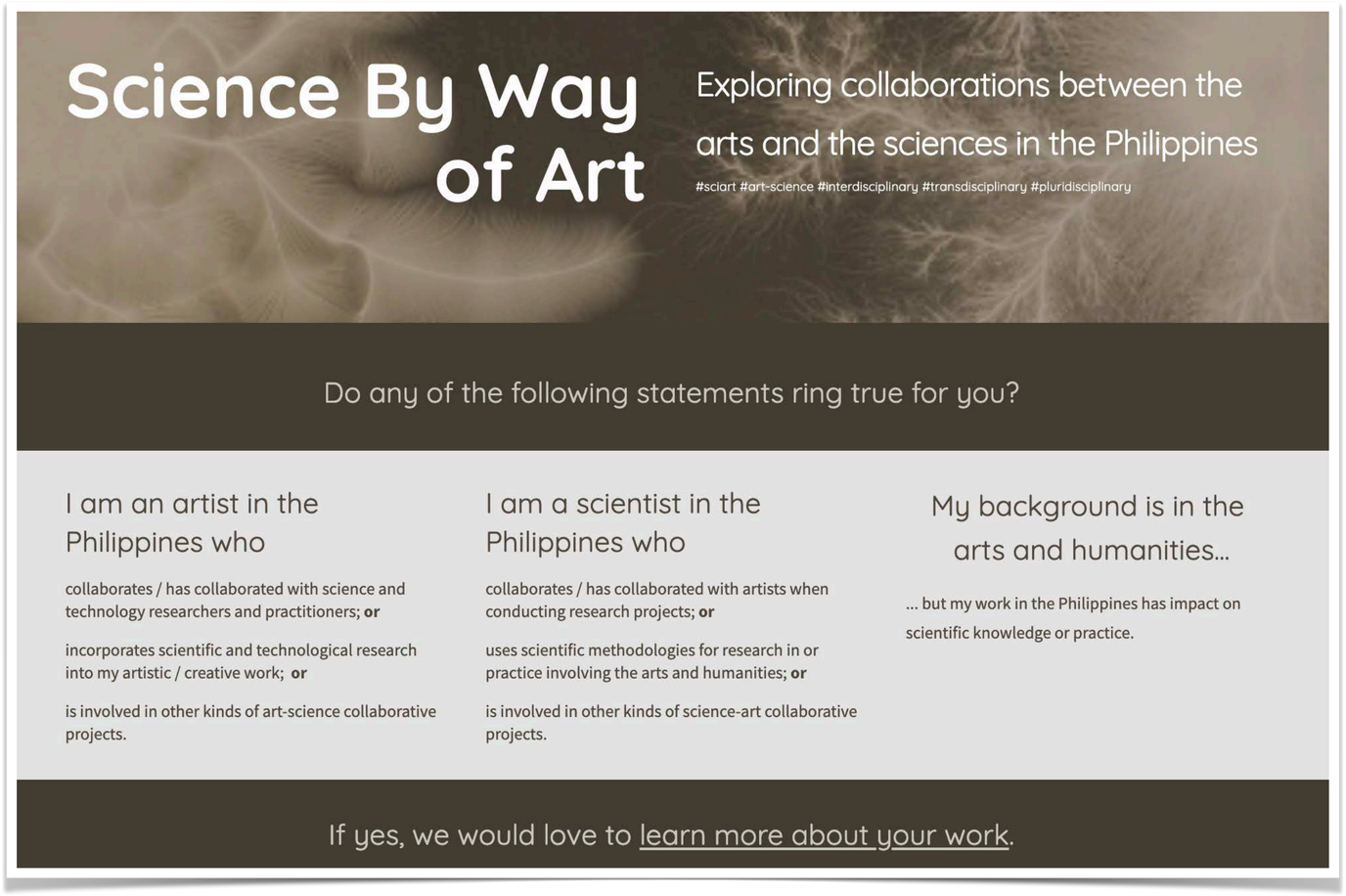
...ng: A case study on UK-enabled ...nd research in/for the Philippine

...d by a long-standing personal interest in creative ...e arts and humanities that have led or can lead to

...were previously published in Torre et al., 2018.

(Maranan, Casauay, & Calora, 2022)

BRITISH COUNCIL



Open Call

Archaeologist/explorer
Philosopher of science
New media artist
Chemists (who work in cultural heritage)
Designer
Cultural workers
Poets
Science fiction writer
Environmental scientists
Neuroeconomics researcher
etc.

What we've found so far

Scientific establishment sees value in engaging the arts and humanities but usually only in very limited parts of the process. Engagement is usually peripheral, but certainly could be expanded.

Many different kinds of engagements but nearly all have a strong political or advocacy bent (decolonizing knowledge, policy, public awareness), which was unexpected.

Science communication was well-known but the idea of science public engagement not so much.

Unusually diversity of individual interests

Feeling like they had to choose either the arts or the sciences, or forced by family in one direction or another.

Fundamental traits? Cognitive flexibility and openness, divergent and convergent thinking, etc.

Shifting away from the creative outputs and outcomes to nurturing creative traits, behaviors, processes

Many of the most interesting outcomes happen as a result of serendipitous comings-together and accidental inquiry, and there is a need for platforms, spaces, individuals that can facilitate this.

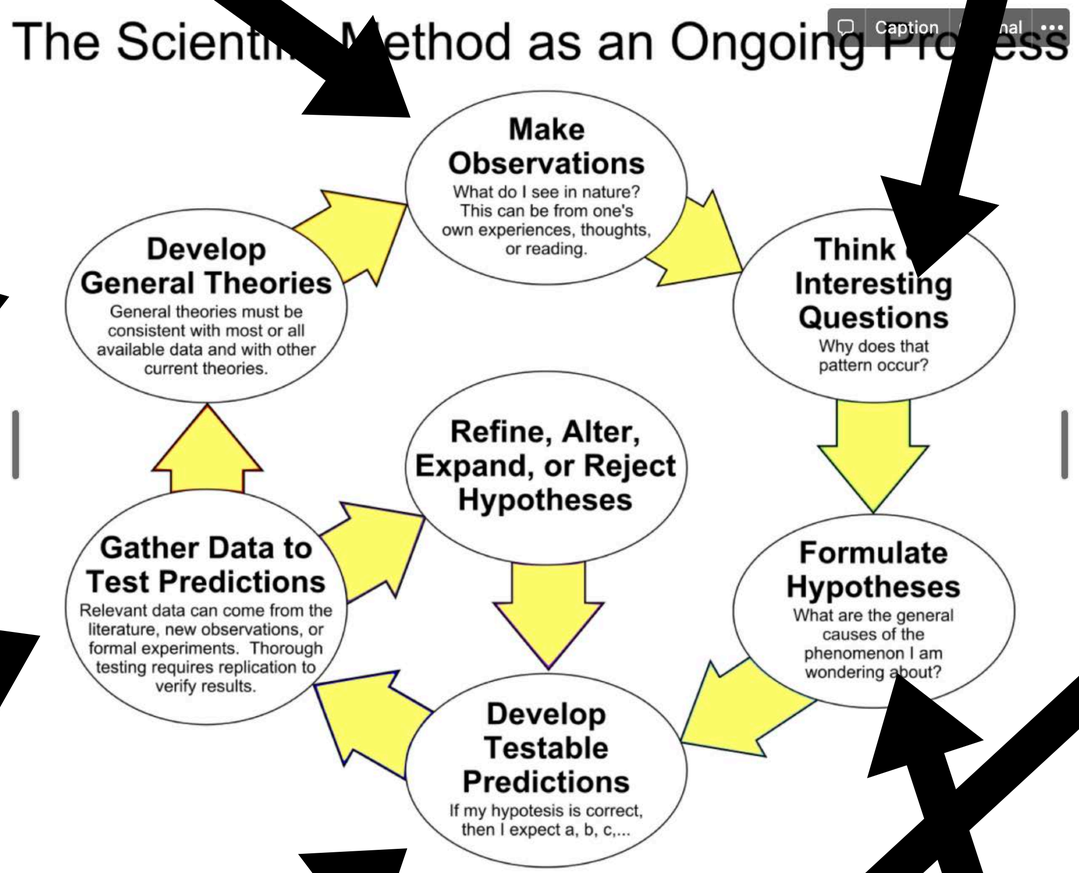
Better measurement of long-term impacts of interdisciplinarity.

The importance of building deep disciplinary expertise and that interdisciplinarity is not always required

Science fiction as a gateway or inspirational/aspirational enabler to early interest in sciart (cf. astronauts). Getting younger people to dream big.

Queerness and queering the process of scientific inquiry

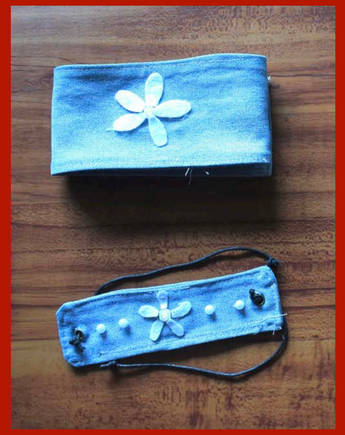
Different kinds of arts-based engagements in the sciences

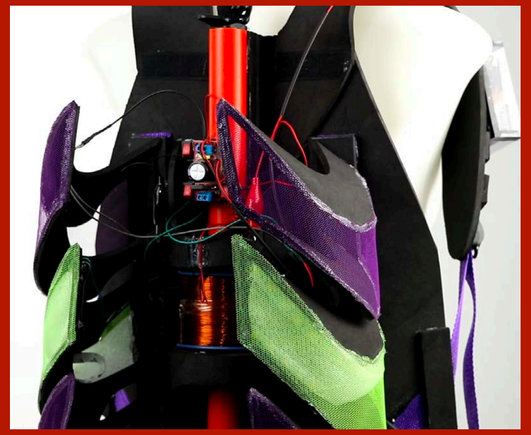


(Connolly, 2011()

(EU Science Diplomacy. 2019)

Wearable Futures





How can we develop empathy with the future?

Future self

Future others

Future world

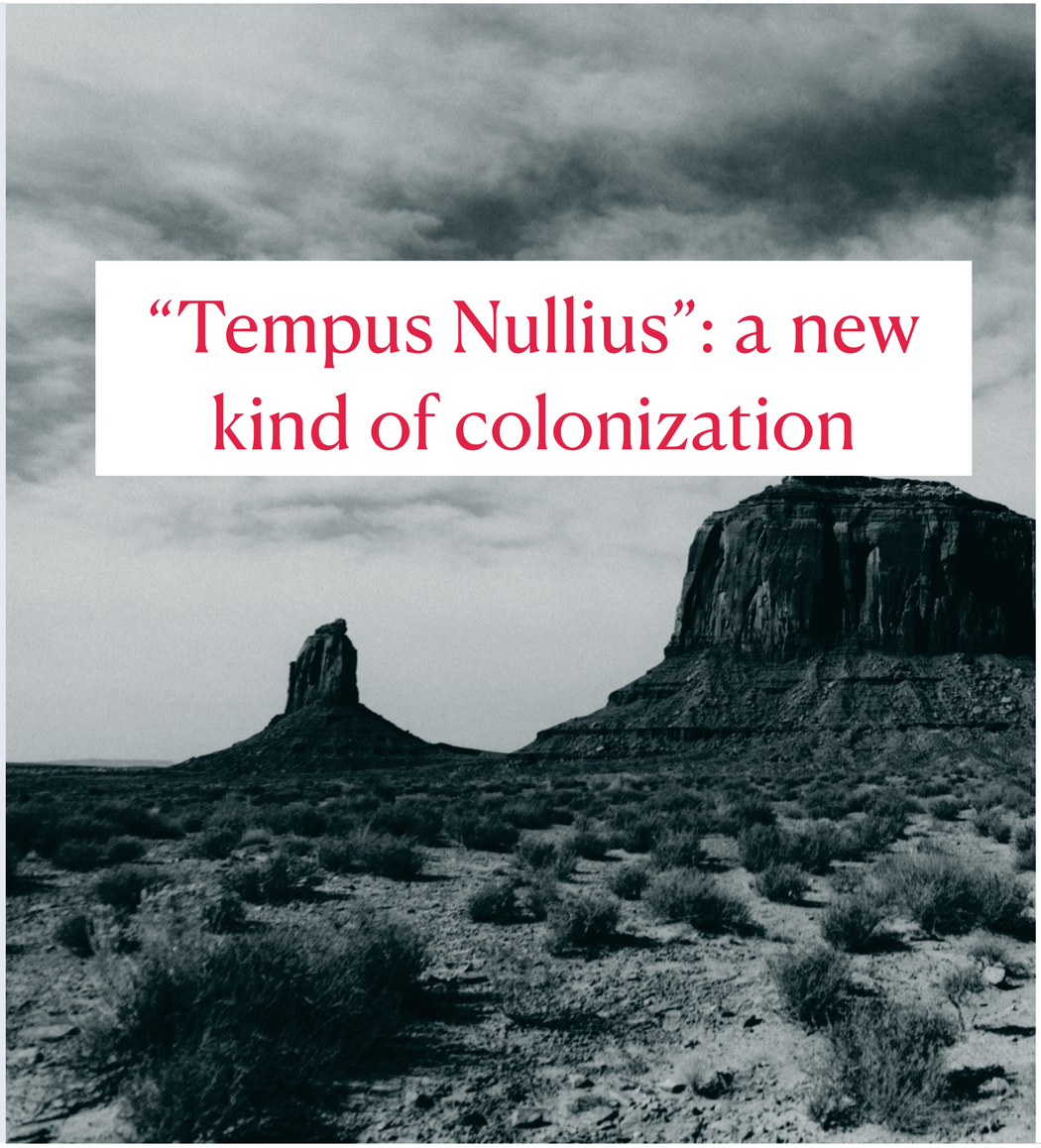
"Full of revelations for everyone who cares about the legacy they leave."—**The Edge,** U2

The Good Ancestor

A RADICAL PRESCRIPTION FOR LONG-TERM THINKING

The most important question we must ask ourselves is, "Are we being good ancestors?"
—polio vaccine creator **JONAS SALK**

Roman Krznaric
Author of *Empathy*



"Tempus Nullius": a new kind of colonization

The tug of war for time

Six drivers of short-termism

Tyranny of the Clock
the acceleration of time since the Middle Ages

Digital Distraction
the hijacking of attention by technology

Political Presentism
myopic focus on the next election

Speculative Capitalism
volatile boom-bust financial markets

Networked Uncertainty
the rise of global risk and contagion

Perpetual Progress
the pursuit of endless economic growth

Six ways to think long

Deep-Time Humility
grasp we are an eyeblink in cosmic time

Legacy Mindset
be remembered well by posterity

Intergenerational Justice
consider the seventh generation ahead

Cathedral Thinking
plan projects beyond a human lifetime

Holistic Forecasting
envision multiple pathways for civilisation

Transcendent Goal
strive for one-planet thriving

Introduction and welcome

Contents

- Introduction and welcome
- Preparation before the course starts
- Assessment guide
- Weekly activities
  - Week 1: Imagining Futures
  - Week 2: Wearables in the near future: Physical computing and critical fashion
  - Week 3: Wearables in the far future: Humanity in outer space
  - Week 4: Engaging with deep time
  - Week 5: Speculative imagination and forecasting
  - Week 6: Putting it together (part 1)
  - Week 7: Putting it together (part 2)
  - Week 8: Presenting and

Hello, BAMS students, welcome to the Wearables Futures course, and thanks for joining me on this experiment! My name is Diego Maranan and I will be facilitating this course. (Because I'm also going to be the one putting together the course materials, I will often speak directly to you in the course material.)

Course objectives

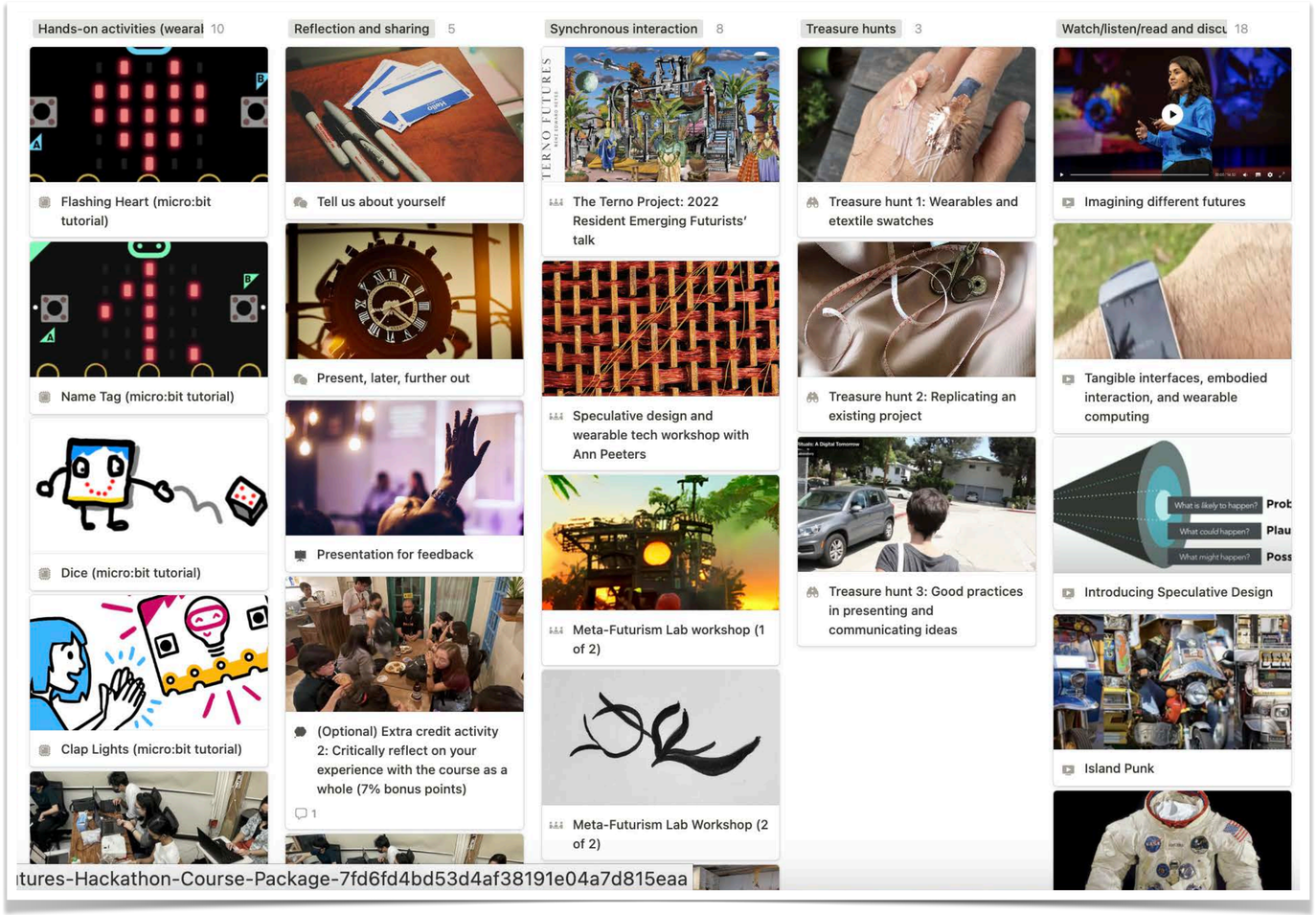
By the end of this course, I hope that you will be able to do the following:

- Describe different issues that may be present in probable, possible, and plausible futures.
- Situate your personal experiences and concerns within the context of futures thinking and speculative design practices
- Propose different creative solutions that respond to potential issues in future scenarios.
- Prototype imaginative wearable technologies that respond to these projections of future scenarios and issues.

Requirements

In this course, you will be learning how to program the BBC micro:bit controller. You will need to purchase the microcontroller and other materials to assemble your kit. See Preparation before the course starts to get started.

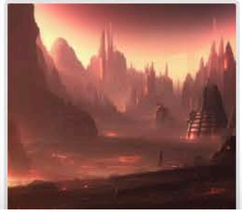
This class will be heavily front-loaded. Most of the course activities will be conducted or due during the



https://tinyurl.com/WFH2022-1T-Intro

MetaFuturism Lab Workshops

Role-playing, world-building, science fiction scenarios

	HMW question	Image (Scenario)	Scenario t...	The situation	Issue	Your d
1	2022-11-14: How can a wearable tech based on health tracker shoes ladies zipper pocket underpants be used by minimum wage workers who rely mainly on public transportation to move around in a heterotopic scenario involving "shelter, transportation, and other infrastructure" in the year...		Heterotopic	In a heterotopic Philippines, I can imagine transportation and other public and private infrastructures are slowly improving and related innovations are already being developed. ...	Shelter, Transport...	
2	2022-11-14: How can a wearable tech based on health tracker eyeglasses be used by students in a dystopic scenario involving "shelter, transportation, and other infrastructure" in the year 2050?		Dystopic	I can imagine in a dystopian Philippines; all public infrastructures are unable to properly serve the people. Structures like civilian homes and commercial, public, and government buildings are not disaster-resilient nor nature-friendly. ...	Shelter, Transport...	
3	2022-11-14: How can a wearable tech based on diy knee energy harvester, 2w at 2 mph! rings be used by health and enviroment enthusiasts in a dystopic scenario involving environment and climate change in the year 2050?		Dystopic	In the 2050 dystopian future, our earth was ravaged by overpopulation. With the increase of people, there is an increase in power generation and consumption. And with people's greediness, they cut down trees causing the death of the forests. ...	Environment and ...	
4	2022-11-14: How can a wearable tech based on mutualence underwear threadpaint embroidery without an embroidery hoop be used by environment and safety enthusiasts in a utopic scenario involving environment and climate change in the year 2050?		Utopic	In the 2050 utopian future, the environment is healthy in its glorious state. Freshwater. Clean air. Organic foods. Healthy inhabitants. Flowers are growing everywhere. Everything seems like a paradise. Climate change is non-...	Environment and ...	
5	2022-11-14: How can a wearable tech based on boertex face touch alarm with digital badge necklace be used by poor communities in a dystopic scenario involving space exploration in the year 2050?		Dystopic	Space Exploration would be a cover-up for people by 2050 in the dystopian future. This is like the plot of Wall-E, wherein people would use going to outer space as a means of running away rather than facing problems on what is	Space Exploration	

Project - Final submission - Gallery

Use this data

Airtable

Customize cards | Filter | Sort | ...

HASMI

TIME FRAME

22 years into the future

SUMMARY

HasMi, a three-wearable set released in 2037, is a magnetic light force sensor device that stores information offline throug...

FINAL LIST OF PROJECT PARTICIPANTS

Faye Anjeli S. Lopez | Airiel Licca D

LOOPABLE VIDEO

https://drive.google.com/drive/folders/1_OCws_Md5eL1YWmNOUgUAEw-4yg6rAV1?usp=sharing

NVro

TIME FRAME

50 years into the future

SUMMARY

The NVro (envy-row) watch derives from the word "environment," which is also what the watch prioritizes. The watch ...

FINAL LIST OF PROJECT PARTICIPANTS

Pauliana Jamie R. Nicolas | Patricia

LOOPABLE VIDEO

Short Film, Envy: https://www.youtube.com/watch?v=A9bZMzQXb9I&feature=youtu.be ; loopable video: ...

KA-KAMPANTE

TIME FRAME

5 years or more

SUMMARY

KA-KAMPANTE is a set of wearable technology that will provide comfort and empowerment to a person in ...

FINAL LIST OF PROJECT PARTICIPANTS

Vernice Bethel C. Gica | Rel Daryle

LOOPABLE VIDEO

https://www.canva.com/design/DAFW2VzC_ow/aVP-PQdNAVsbj3pzZUULzQ/view?utm_content=DAFW2VzC_ow&ut...

The Index

TIME FRAME

5-10 years into the future

SUMMARY

Technology has advanced significantly over a long period of time, frequently enhancing the lives of urban dwellers. However,...

FINAL LIST OF PROJECT PARTICIPANTS

Sapphire Marilag M. Dulorzo

LOOPABLE VIDEO

https://drive.google.com/file/d/1AR9zaAFCxoF0KcdXNTNek22u4J-083-s/view?usp=share_link

Exergen

TIME FRAME

50 years into the future

SUMMARY

Exergen

Remote work
Work-from-home setups have ...

FINAL LIST OF PROJECT PARTICIPANTS

Marciano C. Virola III

LOOPABLE VIDEO

Drive Folder https://drive.google.com/drive/folders/1QmMs-idQSPUSIKqxo8XJlGNi8qzv0kiN...

https://tinyurl.com/WFH2021-1T-Week12

5

DESCRIBE SOME OF THE IDEAS THAT Y...

I learned a lot of new things in Hackathon, may it be about future thinking, creative thinking, problem-solving, speculative design, deep tim...

IF YOU WERE GIVEN A CHANCE TO CON...

Since I worked and experimented with our NVro watch a lot, it would be really fun if I managed to 3d print the casing of the watch, so it would look like ...

REFER TO THE COMPLETE COMPLETE L...

Almost every topic made an impression on me, as everything was new to me. But some of the topics that altered my beliefs and perspective in life were th...

WERE THERE ANY UNEXPECTED OUTCO...

The only unexpected outcomes and experiences that I got from the course were positive ones. For all I know, I could say how unexpected everything...

DESIGN THE COURSE YOURSELF

I thought of this before when we were asked by Sir Lucky if we would want to

6

DESCRIBE SOME OF THE IDEAS THAT Y...

I created my final project individually. I am solely responsible for developing, considering, and discarding my ideas. I had ideas for a pneumatic system, a ...

IF YOU WERE GIVEN A CHANCE TO CON...

I would love to pursue this as my capstone MMS 200 project. The design itself is already functional, so if it's the same project that I will expand on the...

REFER TO THE COMPLETE COMPLETE L...

I initially thought that prototyping conceptual devices always meant that they will eventually be in mass production after a few decades. It ...

WERE THERE ANY UNEXPECTED OUTCO...

I was honestly expecting that we will get to use Arduino. Despite the convenience of the Micro:bit having built-in sensors, it seems that Arduin...

DESIGN THE COURSE YOURSELF

I think some sewing guides could have helped develop more scratch-built

7

DESCRIBE SOME OF THE IDEAS THAT Y...

One of the ideas I developed was the wearable technology I designed for the year 2050. I decided to do a knee-pad and ring configuration that helps crea...

IF YOU WERE GIVEN A CHANCE TO CON...

Truthfully, although HasMi is an exciting project to work on and there are countless possibilities to improve the product further. Still, I would like t...

REFER TO THE COMPLETE COMPLETE L...

At the beginning of this course, I did not know what type of project I would do and present to everyone. I was initially confused about what kind of ...

WERE THERE ANY UNEXPECTED OUTCO...

I think the most unexpected experience would be the fact that I must create a story. Upon entering this course, I initially thought that when entering th...

DESIGN THE COURSE YOURSELF

If I were to design my version of this course, I would also go on the same

8

DESCRIBE SOME OF THE IDEAS THAT Y...

One of the ideas that I personally consider as an achievement was being able to use basic concepts of electronics towards achieving the ...

IF YOU WERE GIVEN A CHANCE TO CON...

If I were to continue my project, HASMI, in the future, I would love to open the opportunity of personal security. Since our current device is ...

REFER TO THE COMPLETE COMPLETE L...

From everything that happened in the course, there were three activities that were much impactful to me:
...

WERE THERE ANY UNEXPECTED OUTCO...

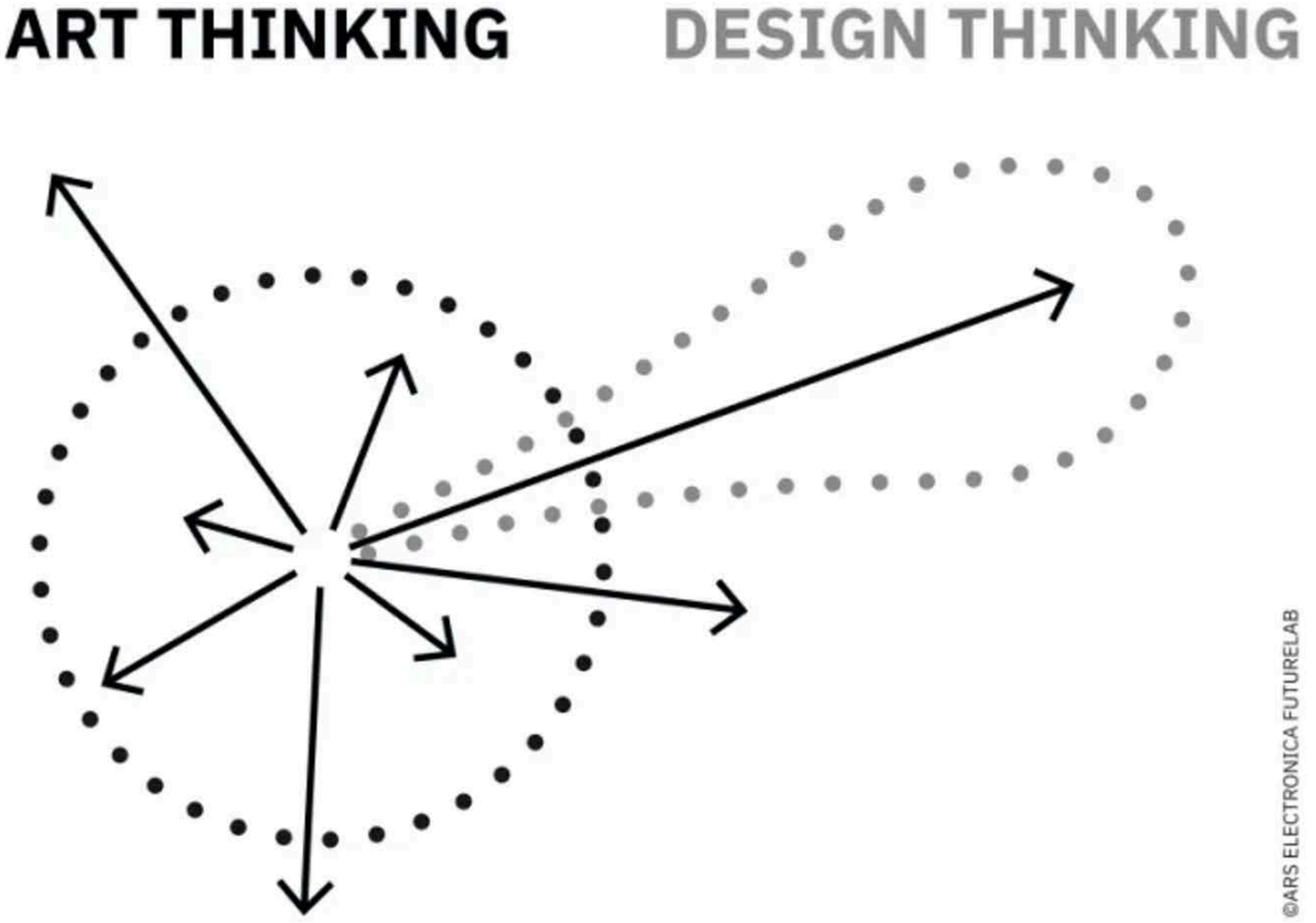
I think one of the most unexpected things in the course was the discussion about science fiction and about futurism. Going into this course, I ...

DESIGN THE COURSE YOURSELF

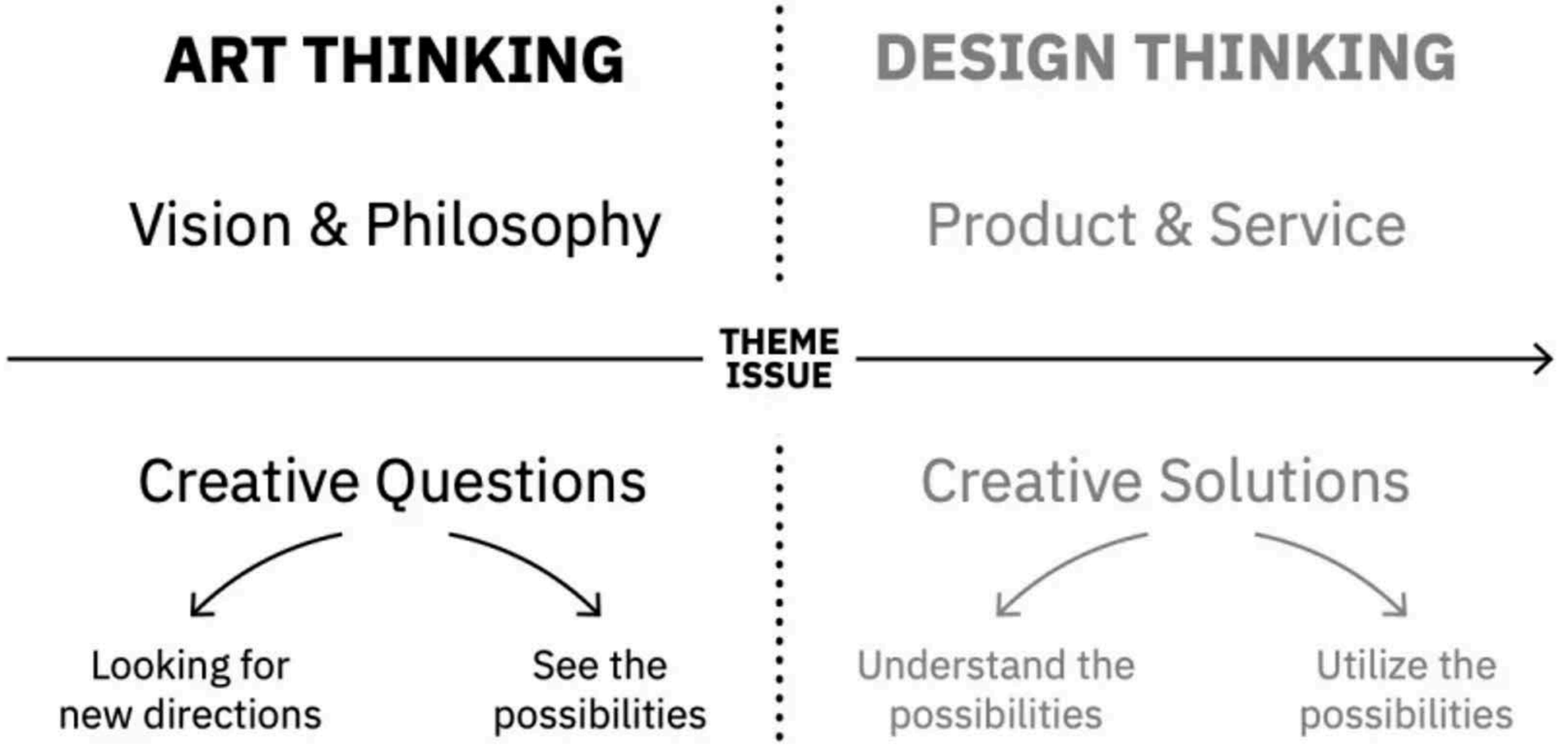
If I were to design this course, perhaps I would try to divide the timeline into

Summary

Dama	Using embodied insight and dancerly knowledge to suggest novel solutions to existing problems and for creative transformative experiences
Biomodd	Systems thinking, complexity thinking, circularity, radical approaches to thinking about sustainability
Science by Way of Art	Advancing the potential of the arts to engage with the sciences at all levels
Wearable Futures	Reimagining the future, resisting received images of the future, hands-on prototyping of the future



https://ars.electronica.art/futurelab/en/research-art-thinking/



https://ars.electronica.art/futurelab/en/research-art-thinking/

Artscience

Conceptual frameworks, projects, and other activities in which there is a thoughtful engagement between the arts and humanities with fundamental and applied scientific research, predicated on or leading to shared approaches, topics, concerns, and/or results.

“Artists and scientists seek answers to the same fundamental questions: who are we, why are we here, and where are we going? Both art and science build models of human experience in order to extend the boundaries of human capacity. Despite this common ground, artists and scientists are too often separate in their endeavors”

Sciart Initiative {n.d.}

Teaching art in an artscience framework

Art for communication
Art is heritage
Art as part of culture
Art as expression
Art as political
Art as commodity

Art as process, ethos, sensibility.

Art as motor-cognitive-affective-social abilities. Curiosity, inquisitiveness, openness, risk-taking, and the skills to observe, question, explore, and engage with the self, others, and the world.

How can the arts and humanities help the sciences?

How can the sciences help the arts and humanities?

Public engagement.

Identifying new questions to ask.

Build new models of human experience.

Expand our models of probable, possible, and plausible futures.

Propose new perspectives and methods to existing problems.

Train cognitive skills needed to develop and push the field.

Artscience Thinking

Art Thinking
Design Thinking
Systems Thinking
Computational Thinking
Complexity Thinking
Futures Thinking
Emergence Thinking

References

- 6.2.1 Skills for Working at the Science-Policy Interface. (2019, July 25). EU Science Diplomacy. https://www.s4d4c.eu/topic/6-2-1-science-and-diplomacy-two-different-worlds/
- Christova, M., Rafolt, D., Golaszewski, S., & Gallasch, E. (2011). Outlasting corticomotor excitability changes induced by 25 Hz whole-hand mechanical stimulation. European Journal of Applied Physiology, 111(12), 3051–3059. https://doi.org/10.1007/s00421-011-1933-0
- Connolly, R. (2011, February 17). Explaining the Scientific Process. NOVA / PBS. https://www.pbs.org/wgbh/nova/article/explaining-the-scientific-process/
- Dean, S. E. (2014). Amerta Movement & Somatic Costume: Sourcing the Ecological Image. In K. Bloom, M. Galanter, & S. Reeve (Eds.), Embodied Lives: Reflections on the Influence of Suprapto Suryodarmo and Amerta Movement.
- Denham, S. L., Steyaert, P., Auborn, J., Jaffe, S., Melville, D., Pierce, B., Maranan, D. S., Rees, J., & Matthias, J. (2021). Mindflow Prototype [Wearable technology + software prototype]. https://www.youtube.com/watch?v=9mx54y8735I
- Feldenkrais, M. (1972). Awareness through movement; health exercises for personal growth (1st ed.). New York: Harper & Row.
- Hanna, Thomas. 1988. Somatics: Reawakening the Mind's Control of Movement, Flexibility, and Health. Cambridge, MA: Da Capo Life Long.
- Ives, J. C. (2003). Comments on "The Feldenkrais Method®: A Dynamic Approach to Changing Motor Behavior." Research Quarterly for Exercise and Sport, 74(2), 116–123. https://doi.org/10.1080/02701367.2003.10609072
- Kavanagh, D. J., Andrade, J., & May, J. (2005). Imaginary Relish and Exquisite Torture: The Elaborated Intrusion Theory of Desire. Psychological Review, 112(2), 446–467.
- Lundblad, I., Elert, J., & Gerdle, B. (1999). Randomized Controlled Trial of Physiotherapy and Feldenkrais Interventions in Female Workers with Neck-Shoulder Complaints. Journal of Occupational Rehabilitation, 9(3), 179–194. https://doi.org/10.1023/A:1021301801292
- Lundqvist, L.-O., Zetterlund, C., & Richter, H. O. (2014). Effects of Feldenkrais Method on Chronic Neck/Scapular Pain in People With Visual Impairment: A Randomized Controlled Trial With One-Year Follow-Up. Archives of Physical Medicine and Rehabilitation, 95(9), 1656–1661. https://doi.org/10.1016/j.apmr.2014.05.013
- Maranan, D. S. (2017). Haplós: Towards Technologies for and Applications of Somaesthetics [Ph.D. Thesis, Plymouth University]. http://hdl.handle.net/10026.1/10170
- Maranan, D. S., Casauay, R. F., & Calora, P. (2022). The Value of the Arts and Humanities to Science in the Philippines. https://doi.org/10.5281/zenodo.6605198

References

- Maranan, Diego S., Jane Grant, John Matthias, Mike Phillips, and Susan L. Denham. 2020. “Haplós: Vibrotactile Somaesthetic Technology for Body Awareness (Paper).” In Proceedings of the Fourteenth International Conference on Tangible, Embedded, and Embodied Interaction, 539–43. TEI ’20. Sydney NSW, Australia: Association for Computing Machinery. https://doi.org/10.1145/3374920.3374984.
- Nasser, M., Knight, J., Haines, A., Peeters, A., Maranan, D., Eachempati, P., Nagraj, S. K., & Bernard-Cooper, J. (2021, October 27). Virtual futuristic analogue missions to drive methodological innovation for clinical research for space mission and earth. 32rd IAA Symposium on Space and Society at the 72nd International Astronautical Congress, Dubai, United Arab Emirates. https://iafastro.directory/iac/paper/id/66226/summary/
- Nasser, M., Maranan, D. S., Birsel, Z., Kuchner, U., & Steyaert, P. (2022, October 6). The spread of systematic review methodologies in new disciplines [Conference presentation]. 3rd Evidence-Based Research Conference.
- Nasser, M., Peres, N., Knight, J., Haines, A., Young, C., Maranan, D., Wright, J., Carvil, P., Robinson, K., Westmore, M., Griffin, J., & Halkes, M. (2020). Designing clinical trials for future space missions as a pathway to changing how clinical trials are conducted on Earth. Journal of Evidence-Based Medicine, 13(2). https://doi.org/10.1111/jebm.12391
- Nasser, M., Perez, N., Knight, J., Haines, A., Young, C., Griffin, J., Maranan, D., Wright, J., & Halkes, M. (2018, October 2). The Design Of Clinical Trials And Its Associated Support Systems In Interplanetary Missions. 69th International Astronautical Congress. https://doi.org/10.5281/zenodo.1458125
- Paolucci, T., Zangrando, F., Iosa, M., Angelis, S. D., Marzoli, C., Piccinini, G., & Saraceni, V. M. (2016). Improved interoceptive awareness in chronic low back pain: a comparison of Back school versus Feldenkrais method. Disability and Rehabilitation, 0(0), 1–8. https://doi.org/10.1080/09638288.2016.1175035
- Reyes, Mariel Francesca I. (2019). Dama: Designing a Multisensory Glove. Zenodo. https://doi.org/10.5281/zenodo.5812611
- Rosenkranz, K., & Rothwell, J. C. (2003). Differential effect of muscle vibration on intracortical inhibitory circuits in humans. The Journal of Physiology, 551(2), 649–660. https://doi.org/10.1113/jphysiol.2003.043752
- Rosenkranz, K., & Rothwell, J. C. (2004). The effect of sensory input and attention on the sensorimotor organization of the hand area of the human motor cortex. The Journal of Physiology, 561(1), 307–320. https://doi.org/10.1113/jphysiol.2004.06932
- Rywerant, Y. (2003). The Feldenkrais method: teaching by handling. North Bergen, NJ: Basic Health Publications, in association with the K.S. Giniger Co., New York, N.Y
- SciArt Initiative. (n.d.). Mission. SciArt Initiative. Retrieved December 27, 2021, from http://www.sciartinitiative.org/mission.html
- Shusterman, Richard. 2008. Body Consciousness: A Philosophy of Mindfulness and Somaesthetics. Cambridge ; New York: Cambridge University Press
- Teixeira-Machado, L., Araujo, F., Cunha, F., Menezes, M., Menezes, T., & DeSantana, J. (2015). Feldenkrais method-based exercise improves quality of life in individuals with Parkinson’s disease: a controlled, randomized clinical trial. The Journal of Pain - Abstracts Presented at the 34th Annual Scientific Meeting of the American Pain Society, 16(4, Supplement), S113. https://doi.org/10.1016/j.jpain.2015.01.471
- Verrel, J., Almagor, E., Schumann, F., Lindenberger, U., & Kühn, S. (2015). Changes in neural resting state activity in primary and higher-order motor areas induced by a short sensorimotor intervention

Thank you