

# DIGITAL ARTS-BASED RESEARCH IN EDUCATION

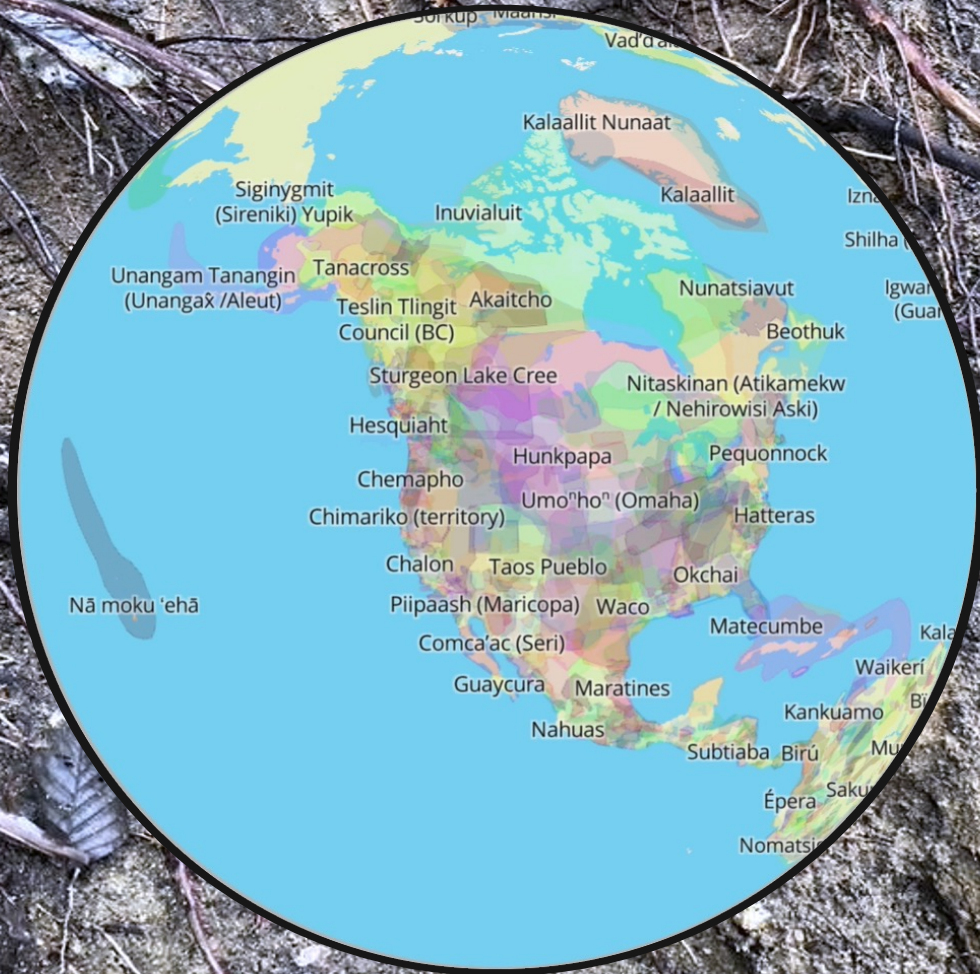
**Rachel Horst**

Language and Literacy Education Department  
The University of British Columbia

[rachelhorst.ca](http://rachelhorst.ca)









Chat storm:

Please share five to ten words that come to mind when you think about:

*... THE FUTURE OF TECHNOLOGY*

*... YOUR RELATIONSHIP WITH THE DIGITAL*

*... YOUR ENTANGLEMENTS WITH COMPUTATION*



# GUIDING QUESTIONS

How does technology mediate my research, teaching, or informal inquiries?

How am I an artistic being? How do I express my creativity?

Where are there openings for creative and artistic experimentation with technologies in my research and teaching?

# RESEARCH CYCLES

- Ideas, wonder, curiosity, questioning...
- Reading, searching, mapping the terrain...
- Design, co-design...
- Data collection, data creation...
- Analysis, interpretation...
- Representation, rendering, performance...



A low-angle, upward-looking photograph of a dense forest. Sunlight filters through the canopy, creating a bright lens flare in the center. The tree trunks are dark and textured, while the leaves show hints of autumn colors like red and orange. The overall mood is serene and natural.

DIGITAL ARTS-BASED RESEARCH





“Tell me, people, what is an elephant like?”

The people answered, an elephant is like...

a water jar,  
a winnowing basket,  
a ploughshare,  
a plough pole,  
a storeroom....

“Saying ‘An elephant is like this, an elephant is not like that! An elephant is not like this, an elephant is like that!’ they fought each other with their fists. And the king was delighted” (The Udana, 1997)



“The notion of “ethico-onto-epistem-ology” was first coined by physicist-philosopher Karen Barad to point at the inseparability of ethics, ontology and epistemology when engaging in (scientific) knowledge production, with scientific practices, and with the world itself and its inhabitants – human and non-human beings that intra-actively co-constitute the world” (Geerts, 2016).





"Theorizing, a form of experimenting, is about being in touch. What keeps theories alive and lively is being responsible and responsive to the world's patternings and murmurings. Doing theory requires being open to the world's aliveness, allowing oneself to be lured by curiosity, surprise, and wonder. Theories are not mere metaphysical pronouncements on the world from some presumed position of exteriority. Theories are living and breathing reconfigurings of the world (Barad, 2012, p. 207)



“a stone sculpture against a black backdrop. the sculpture depicts the ancient Buddhist parable about the blind men trying to identify what an elephant is by touching it on different parts of its body”







The Digital Literacy Centre



Esteban Morales



Kedrick James



Yuya Takeda

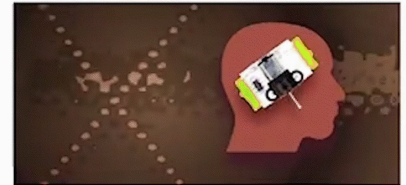
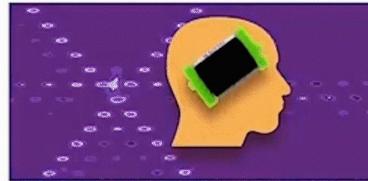
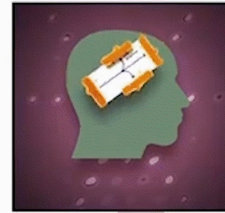
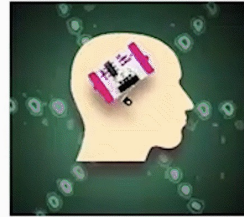


Effiam Yung



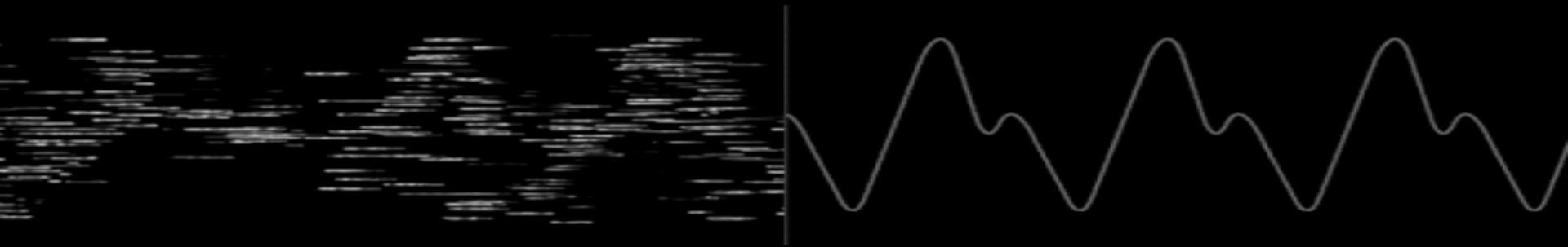
# COMPUTATIONAL THINKING

WHAT COUNTS?





“Computational Thinking is the thought processes involved in formulating problems and their solutions so that the solutions are represented in a form that can be effectively carried out by an information-processing agent” (Wing, 2006).

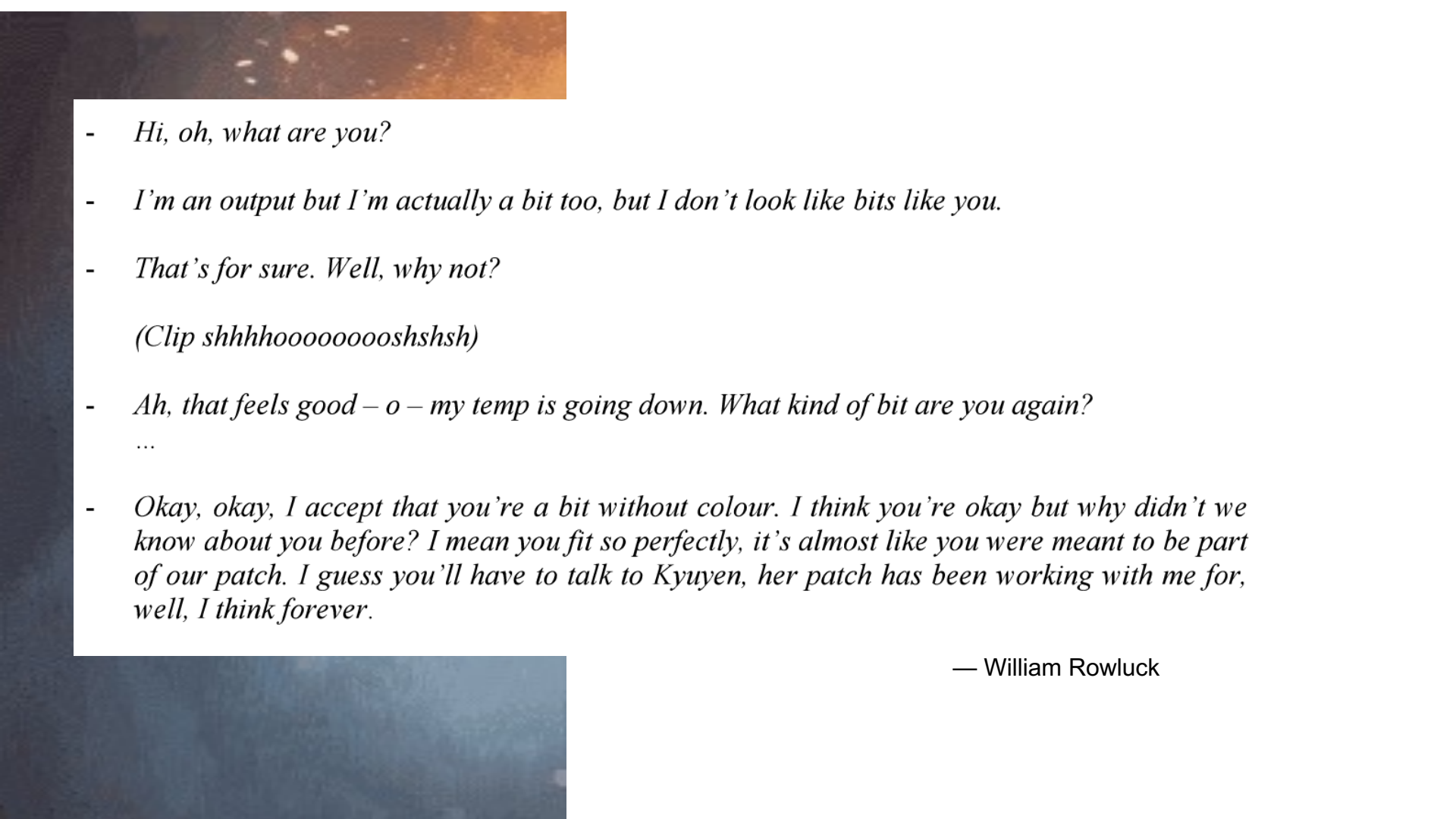






How can computational thinking become meaningfully entangled with other kinds of creative thinking?

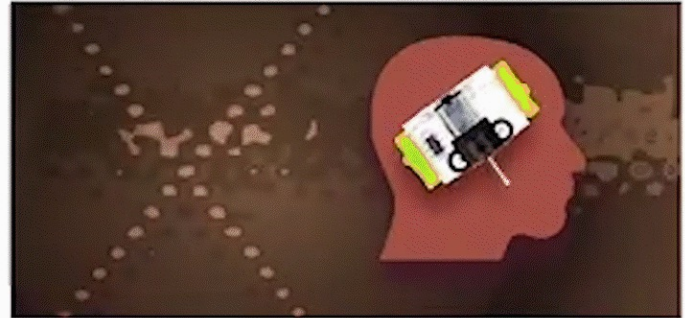
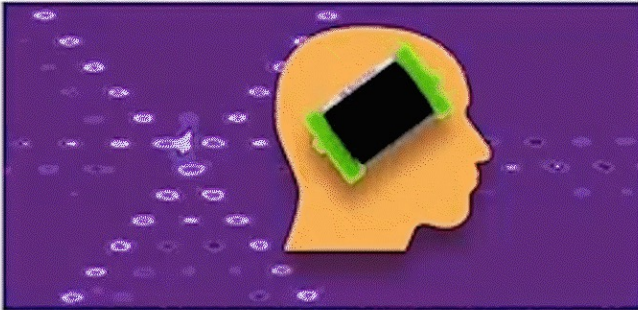
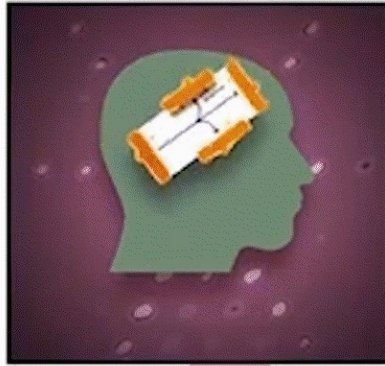
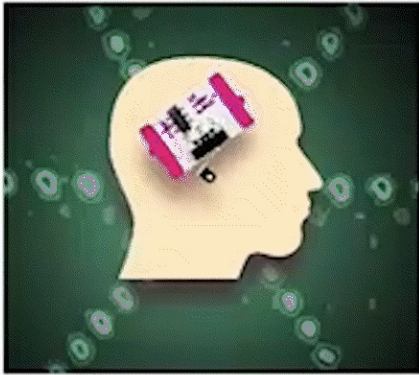


- 
- *Hi, oh, what are you?*
  - *I'm an output but I'm actually a bit too, but I don't look like bits like you.*
  - *That's for sure. Well, why not?*

*(Clip shhhhoooooooooshshsh)*

- *Ah, that feels good – o – my temp is going down. What kind of bit are you again?*  
...
- *Okay, okay, I accept that you're a bit without colour. I think you're okay but why didn't we know about you before? I mean you fit so perfectly, it's almost like you were meant to be part of our patch. I guess you'll have to talk to Kyuyen, her patch has been working with me for, well, I think forever.*

— William Rowluck





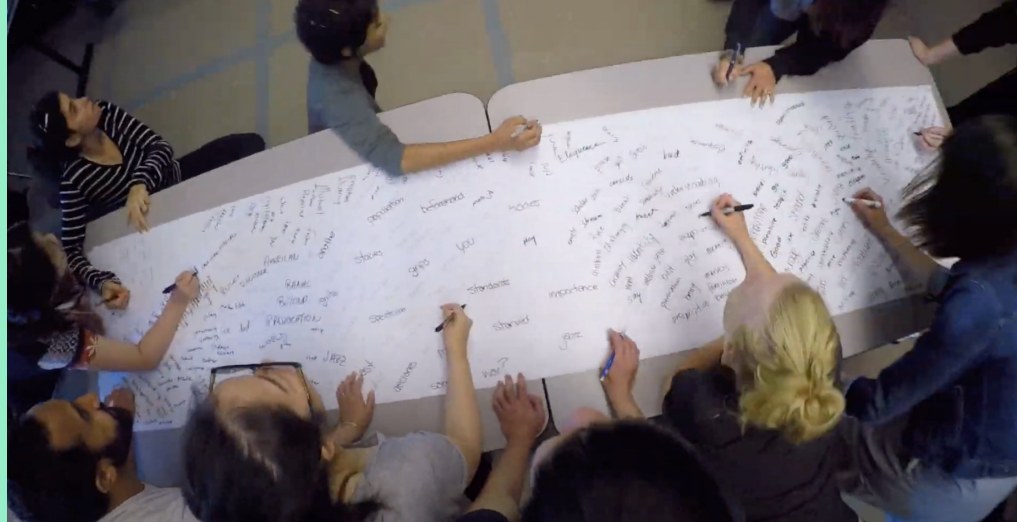
Key points in terms of digital arts-based research:

- Arts-based research opens the windows in our inquiries to allow digital, computational, relational, and artistic ways of knowing to share space.
- Staying curious about the fuzzy regions of our definitions.
- The importance of collaborative experimentation in the building of inquiry

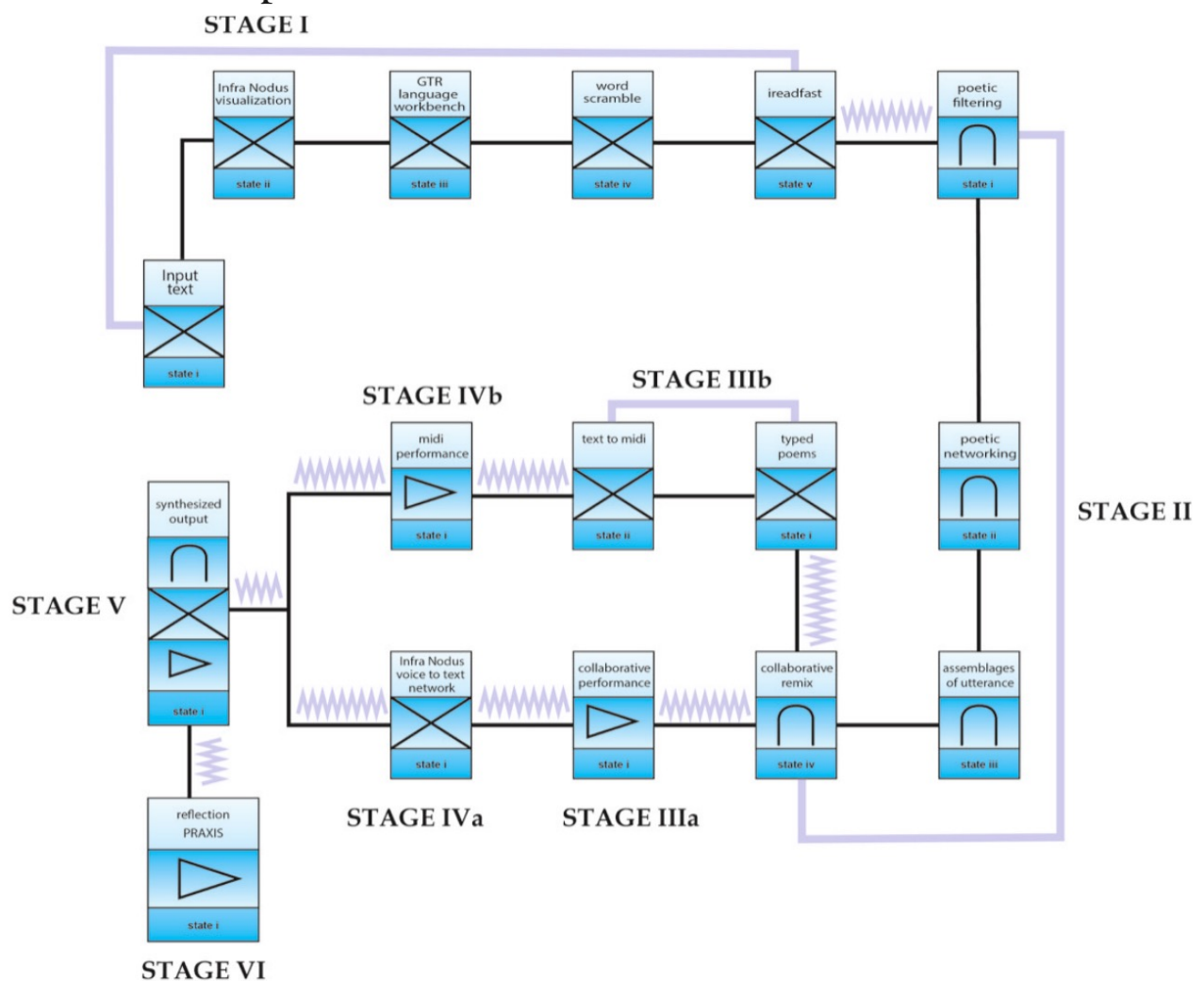
Horst, R., James, K., Takeda, Y., & Rowluck, W. (2020). *From Play to Creative Extrapolation: Fostering Emergent Computational Thinking in the Makerspace*. *Journal of Strategic Innovation and Sustainability*, 15(5), Article 5 <https://doi.org/10.33423/jsis.v15i5.3584>



# THE PATCH



In music, a PATCH creates  
 “a sound made up from a  
 combination of oscillators  
 and/or samples combined with  
 filters, envelopes and effects  
 that is pre-programmed into a  
 synthesizer. This term is  
 derived from older style analog  
 synthesizers that you had to  
 physically patch together with  
 cables to create a sound”  
 (<https://rolandcorp.com>)



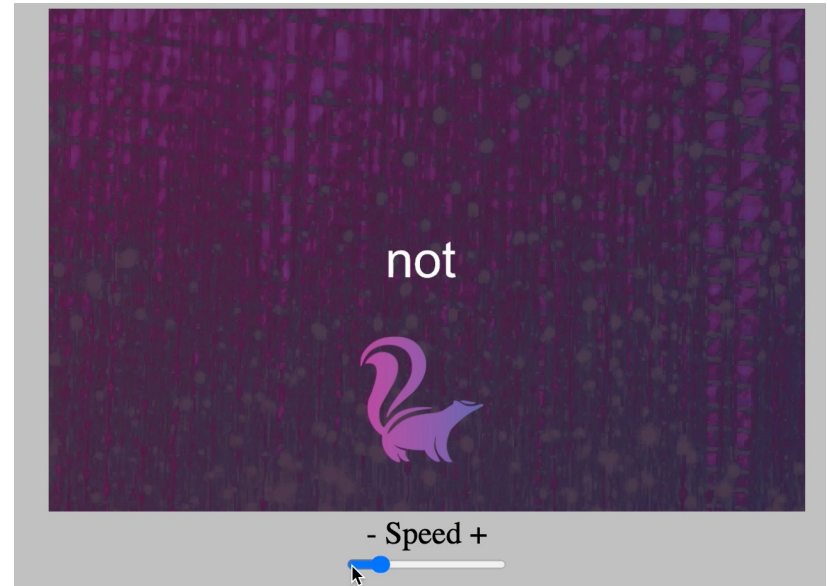
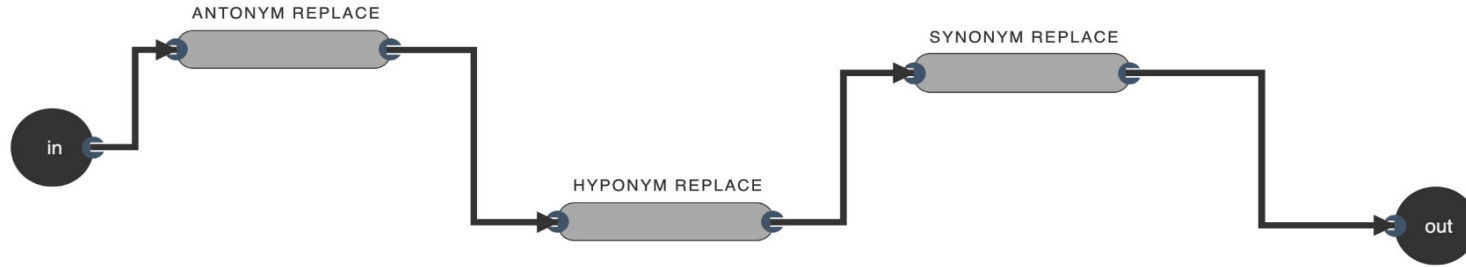
# INPUT SIGNAL

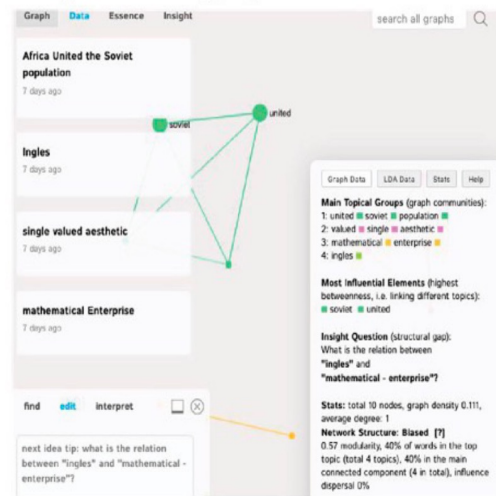
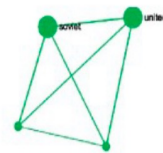
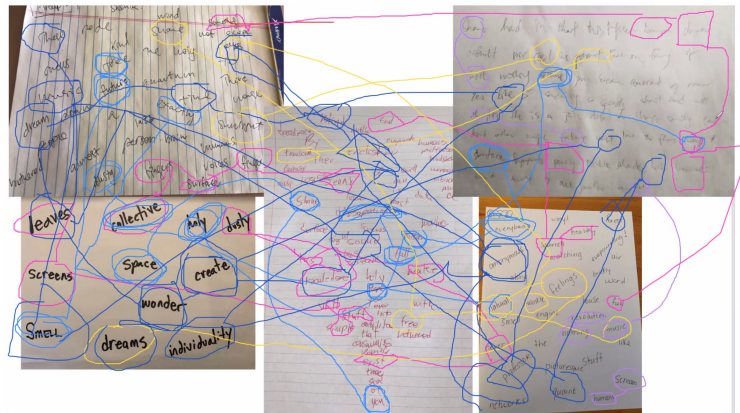
Jorge Luis Borges (1975), "On Exactitude in Science"

In that Empire, the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province. In time, those Unconscionable Maps no longer satisfied, and the Cartographers Guilds struck a Map of the Empire whose size was that of the Empire, and which coincided point for point with it. The following Generations, who were not so fond of the Study of Cartography as their Forebears had been, saw that that vast Map was Useless, and not without some Pitilessness was it, that they delivered it up to the Inclemencies of Sun and Winters. In the Deserts of the West, still today, there are Tattered Ruins of that Map, inhabited by Animals and Beggars; in all the Land there is no other Relic of the Disciplines of Geography. (p. 13)

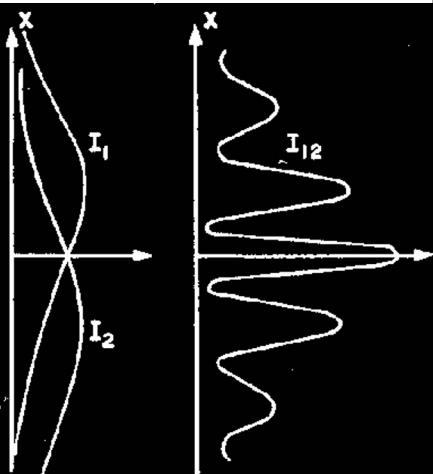
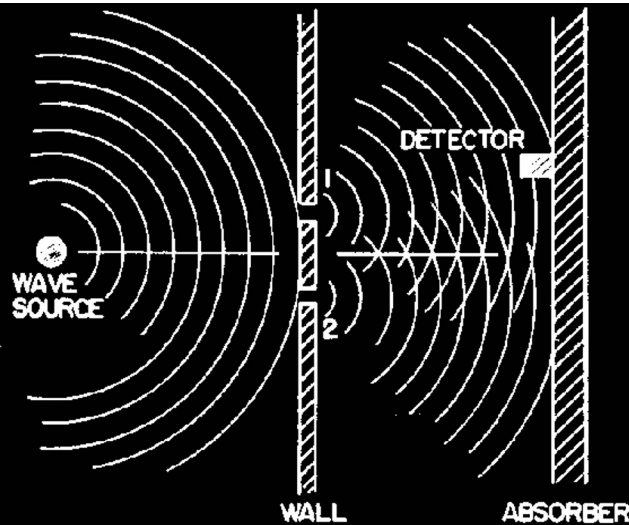


# DIGITAL ANALOG CREATIVE PROCESSING AND DATA CREATION



[illegible]

Diffraction “involves passing one text through another, creating new relations and provoking ‘ripples’ of thinking moving outwards in novel directions... (O’Hallaran, 2023, p. 134).

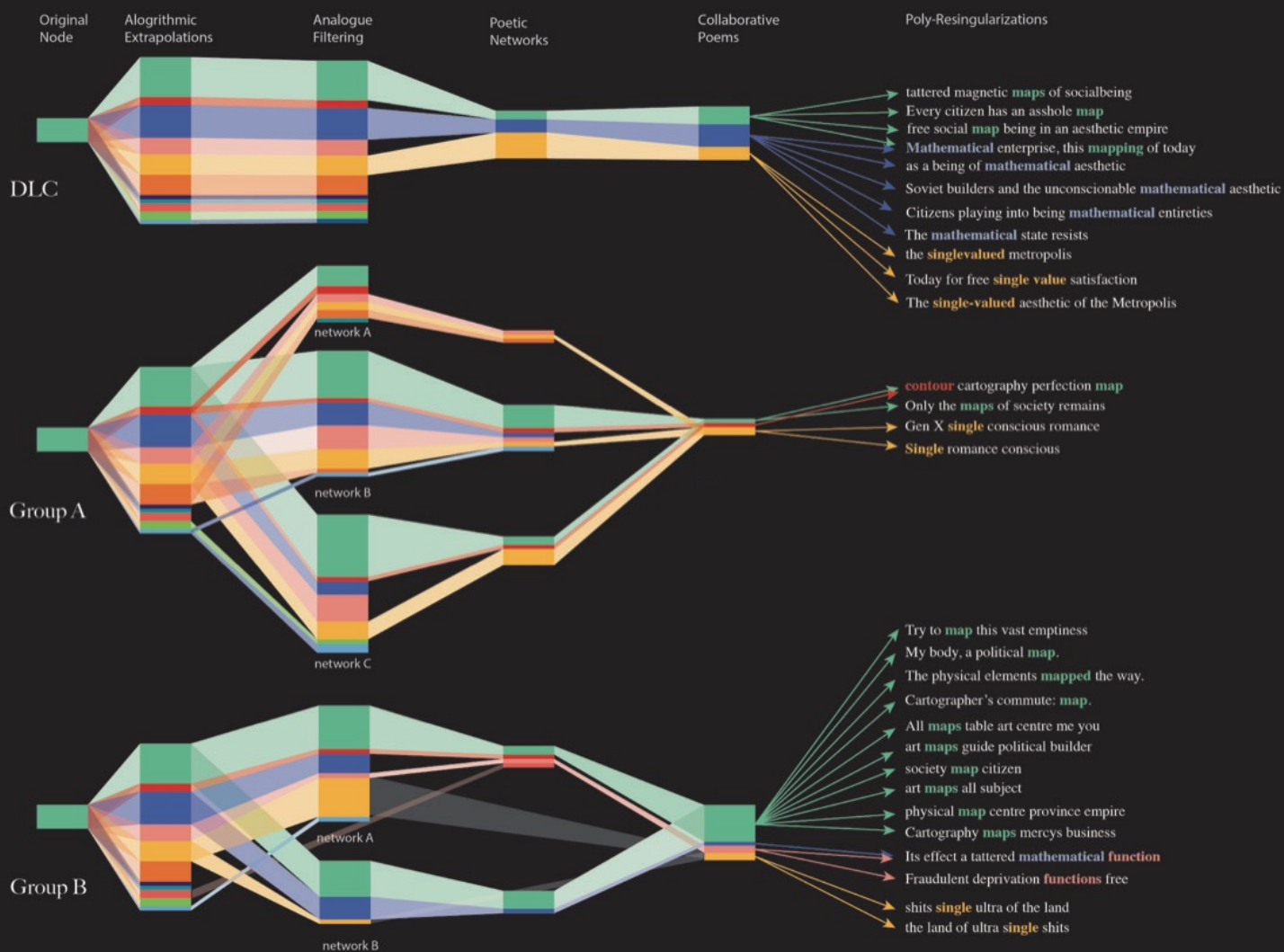
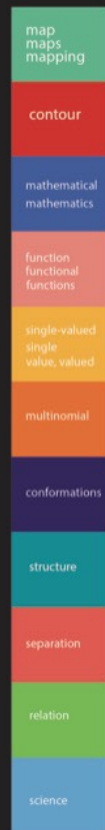


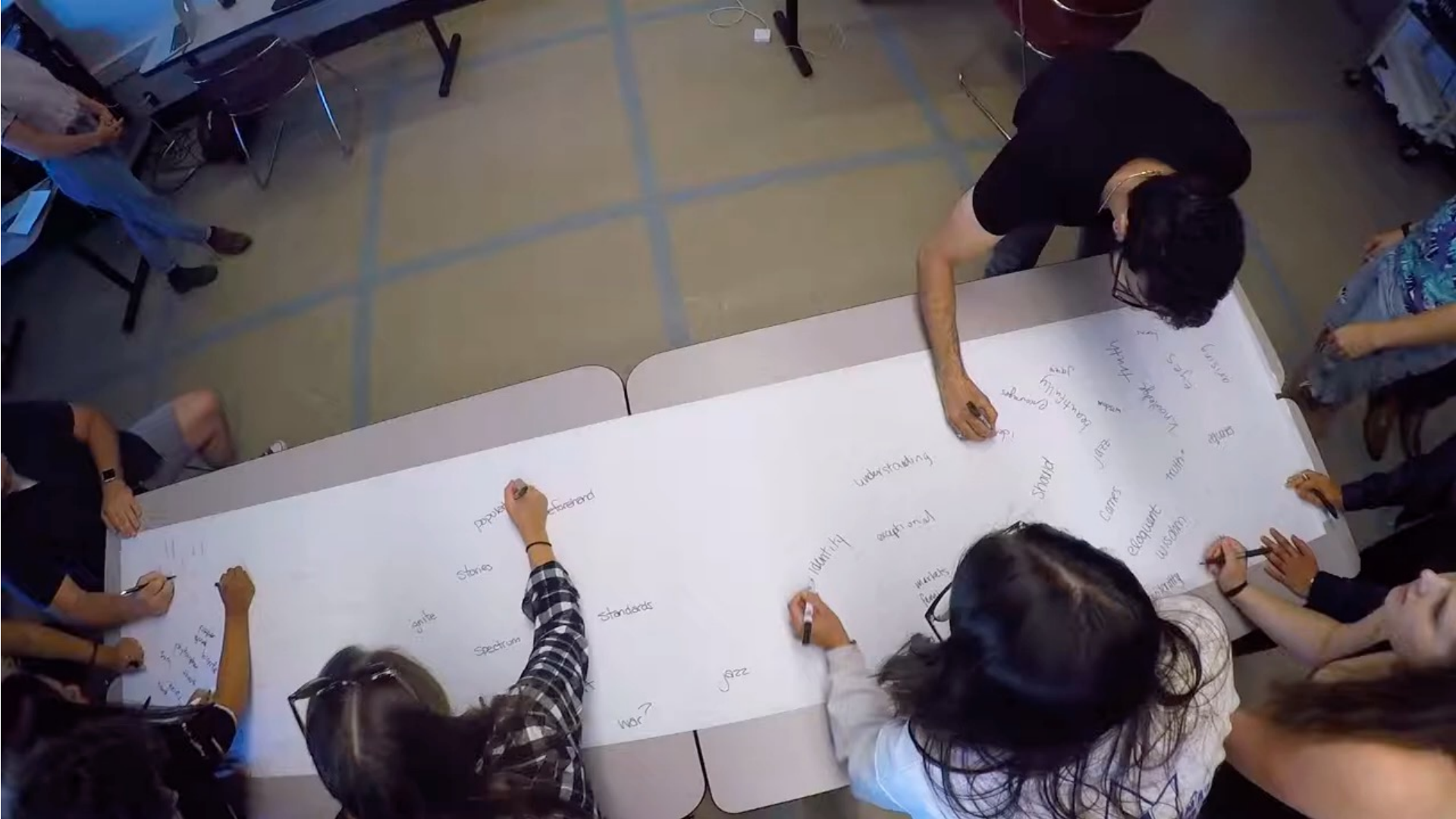
$$I_1 = |h_1|^2$$

$$I_2 = |h_2|^2$$

$$I_{12} = |h_1 + h_2|^2$$









Key themes for digital arts-based research:

- Creative entanglements of the **digital and the analog**
- Collaborative generation of **creative data**
- Generative **Glitch** Pedagogy
- digital **authorship**
- Digitally mediated creative reading and writing
- Embodied, tactile, visceral approach to computation

James, K., Horst, R., Peco Takeda, Y., & Morales, E. (2020). *The Patch: An Artful Syn(aes)thetic Mapping of Linguistic Data through Collaborative Digital / Analogue Literacy Processes*. *McGill Journal of Education*, 55(3), 641–665. <https://doi.org/10.7202/1083426ar>



The background of the slide is white. A solid teal rectangle is positioned in the upper-left quadrant. The bottom half of the slide is filled with a dense, chaotic network of thin, black, hand-drawn scribbles that overlap and crisscross. The text is centered within the teal rectangle.

# **WRITING THE FUTURES IMAGINARY:**

**DIGITAL ARTS-BASED INQUIRY AND  
THE FUTURES LITERACIES OF  
TEACHER CANDIDATES**



# futures literacies

*write, create, collaborate, imagine, play, question, wonder...*

“

[I]t matters how we enter the future, what senses of futurity we bring into play, which modes of relating to the not-yet we enable knowing and thinking practices to nurture.

(Wilkie et al., 2019, p. 5)

## Multiple futures literacies: An interdisciplinary review

Rachel Horst  and Derek Gladwin 

Department of Language and Literacy Education, The University of British Columbia, Vancouver, BC, Canada

### ABSTRACT

It is no surprise that concern for the future is on the rise. Several catastrophes obscure our future(s) imaginary, such as climate change, a global pandemic, racial inequality, and political polarization. Students are feeling a disconnect between what they learn in classrooms and the futures that populate their media platforms. Futures literacies provides one proposed pedagogical intervention that takes up future(s) possibility as a context for inquiry across the disciplines. Building upon and extending from the discipline of futures studies, which involves inquiry into possible, probable, and preferable futures through social and technological advancements, futures literacies refers to the ways we perceive, sense, enact, envision, and create the future in the present. In this interdisciplinary review, we synthesize research that investigates the ways humans engage with future potentiality, moving toward an expansive model of futures literacies and mapping generative connections between literacy research and other discourses including futures studies scholarship.

### ARTICLE HISTORY

Received 31 January 2022  
Revised 16 June 2022  
Accepted 17 June 2022

### KEYWORDS

futures literacies;  
possibility; multiple  
literacies; critical  
literacies; futures studies;  
imagination

### Re-imagining the future

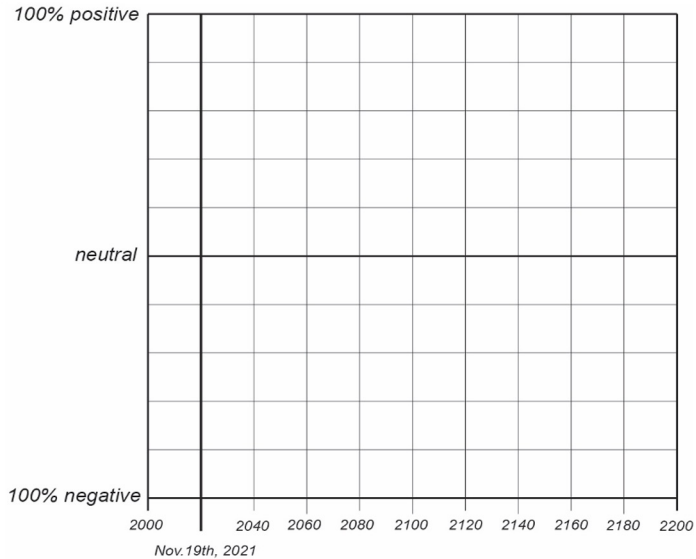
While concern for the future is not new, it is not surprising that the future contains a new sense of immediacy. A global pandemic has swept the world, promising any number of reverberating sociocultural consequences. Climate change entangles with human politics to create an array of probable future disasters. Our technologies proliferate at an ever-increasing rate, inspiring for some the hope of a technological utopian solution to all our problems, and for others, the existential despair that technology has become our ultimate problem. The futures that we read in the tea leaves of our present circumstances contain powerful and performative sway in the way things unfold in the future present. As Polak (1961) wrote, “the future lies concealed in today’s images of the future”

## Futures Questionnaire

Name: \_\_\_\_\_

Email: \_\_\_\_\_

1) **Instructions:** Starting on the left side of the graph, please pick a point between 100% positive and 100% negative, indicating your sense of *the total well-being of **humanity*** for the year 2000. Drawing a line or curve, indicate how humanity's well-being has changed over the past twenty years (each horizontal cell on the graph represents 20 years). Continue drawing your line to indicate how the well-being of humanity will change over the next 180 years.



Which of the following describes your vision of the future in 100 years? (check all that apply)

[www.futuresliteracies.ca/creative-writing](http://www.futuresliteracies.ca/creative-writing)

- ☒ Humanity is over-rated
- ☐ The future is post human
- ☐ AI domination
- ☐ The future is a beautiful dream
- ☐ This place looks way too familiar
- ☐ If only we planned for this!
- ☐ Where is everybody?
- ☐ Humanity evolves into superior beings
- ☐ Corporations rule the universe
- ☒ Life is a video game
- ☐ The future in 100 years will be...

If the future is a glass, how full will it be?

Let's rethink what we mean by full and empty.

Click for your future archetype

Get my archetype

I don't like my archetype

### YOU ARE A NEW PATTERN WEAVER

You are looking to make change in the world by telling the story in a new way. One person's trash is another person's treasure and you are interested in discovering and creating treasure. Through re-patterning the world and seeking out new narratives, you pave the way towards different outcomes. You are innovative and energized while also being realistic and aware of the constraints of history. Whatever happens, you will be creatively involved.



*Time*

*Subject*

*Mood*

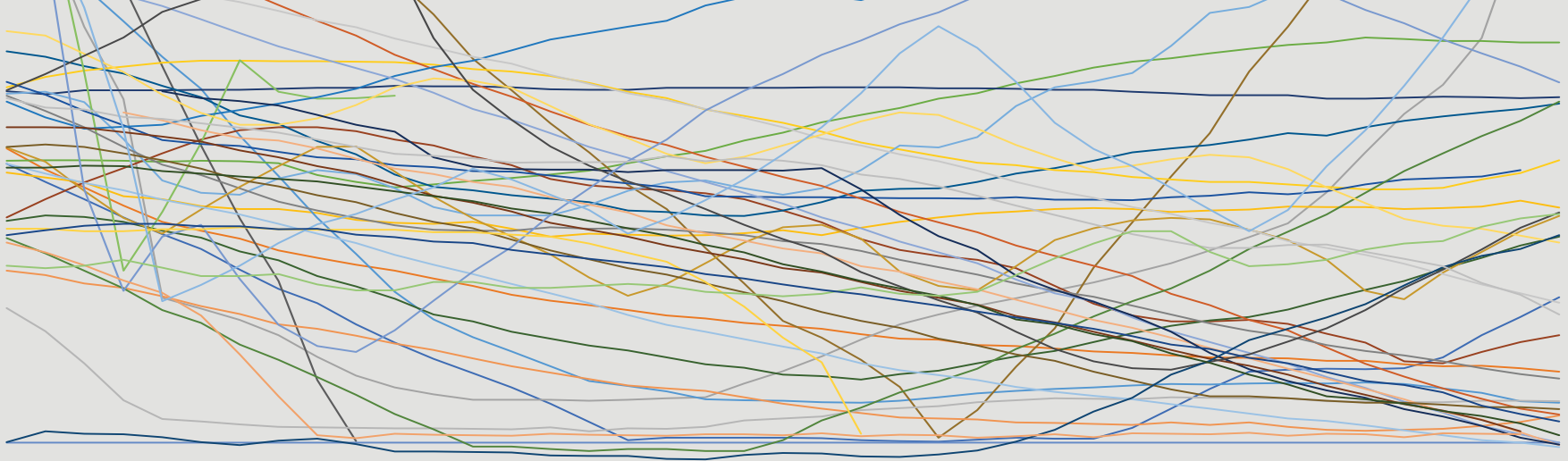
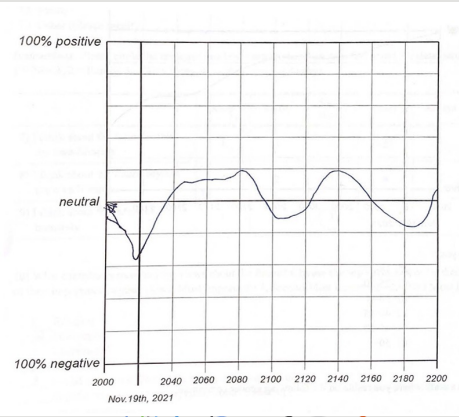
*Object*



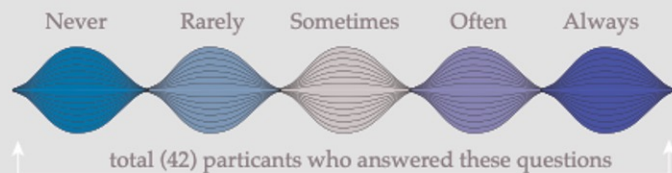
The futures is a few years from now.  
You are a species on the verge of extinction.  
You are feeling unsure.  
You focus your attention upon a song.

# DATA RENDERINGS

“theoretical spaces through which to explore artistic ways of knowing and being in research” (Springgay, et al., 2005, p. 899).



200 YEARS OF PLANETARY WELLBEING



I think about....



5 participants

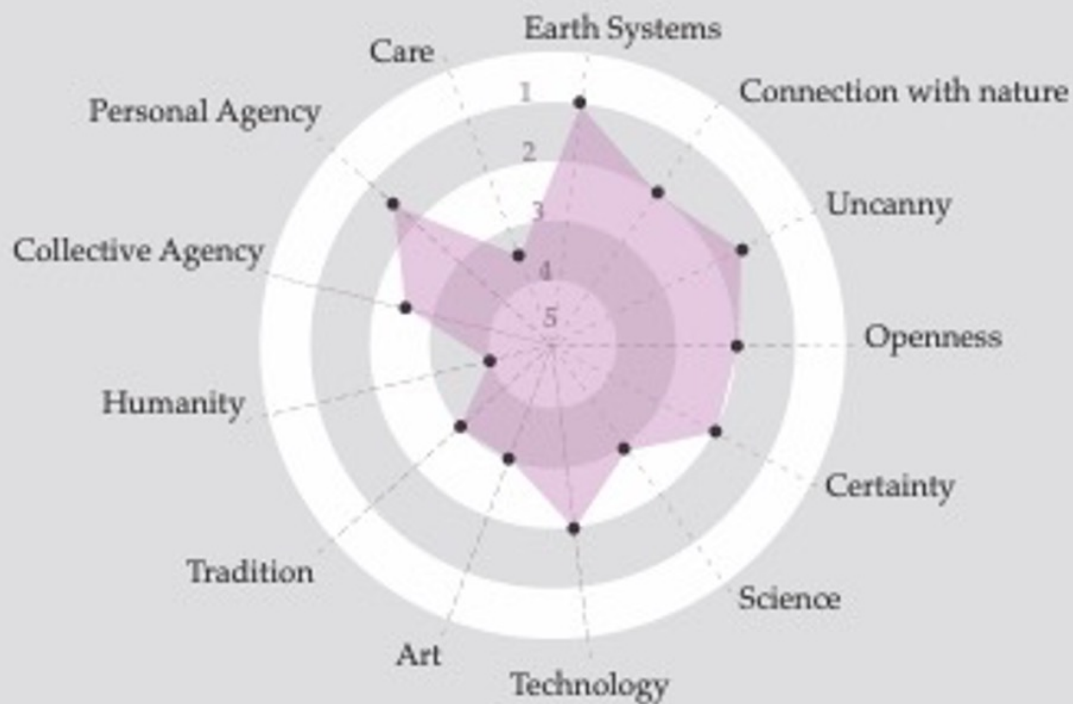
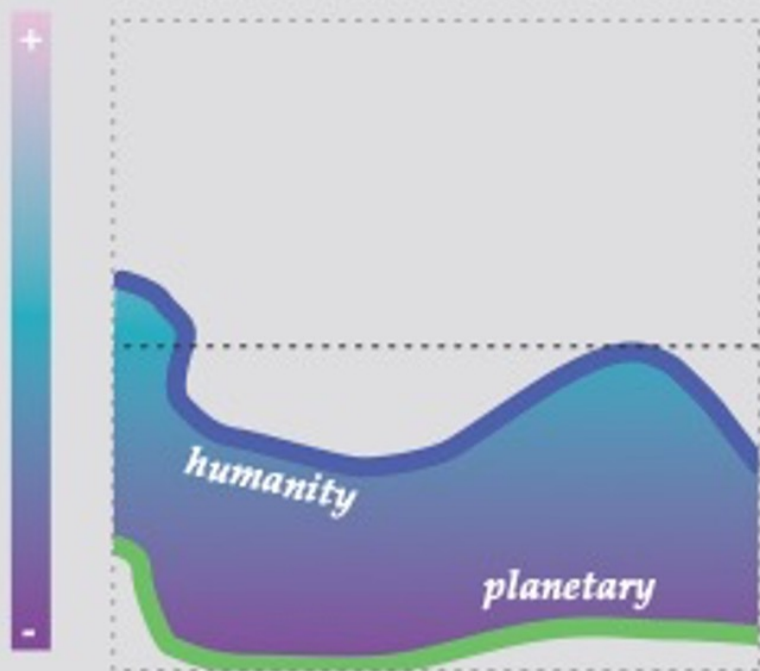
I care about the future beyond my own lifespan

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

5 participants







Time is *CYCLICAL*

Feelings about the future:  
SCARY, UNCERTAIN, IMMEDIATE

*Influences upon futures imagining:*

- Scientific reports
- Philosophy
- Documentaries

# CREATIVE DATA



*We are all just drifting, slow moving liquid bodies in a liquid world. Shapeless minds. If this is the end, we are glad it is blue. It reminds us of the deepest ocean, the deepest space and under the Blue Pressure, we can rest. Liquify. Slip in and out of each other without losing any part of ourselves. Cut only by pirate ships dripping with gold, leaving Honey Yellow trails through our blue-black ink. If this is the end, we are glad it is gooey. Thick with time, thick with space, thick with loss and lined with gain. There is no fear, there is no hurt. There are no hearts to race, and no heads to spin, no eyes to watch, and no hands to mould. We are only what we are - eternal and slippery. If this is the end, we are glad it is now.*

# FICTOPOEISIS...

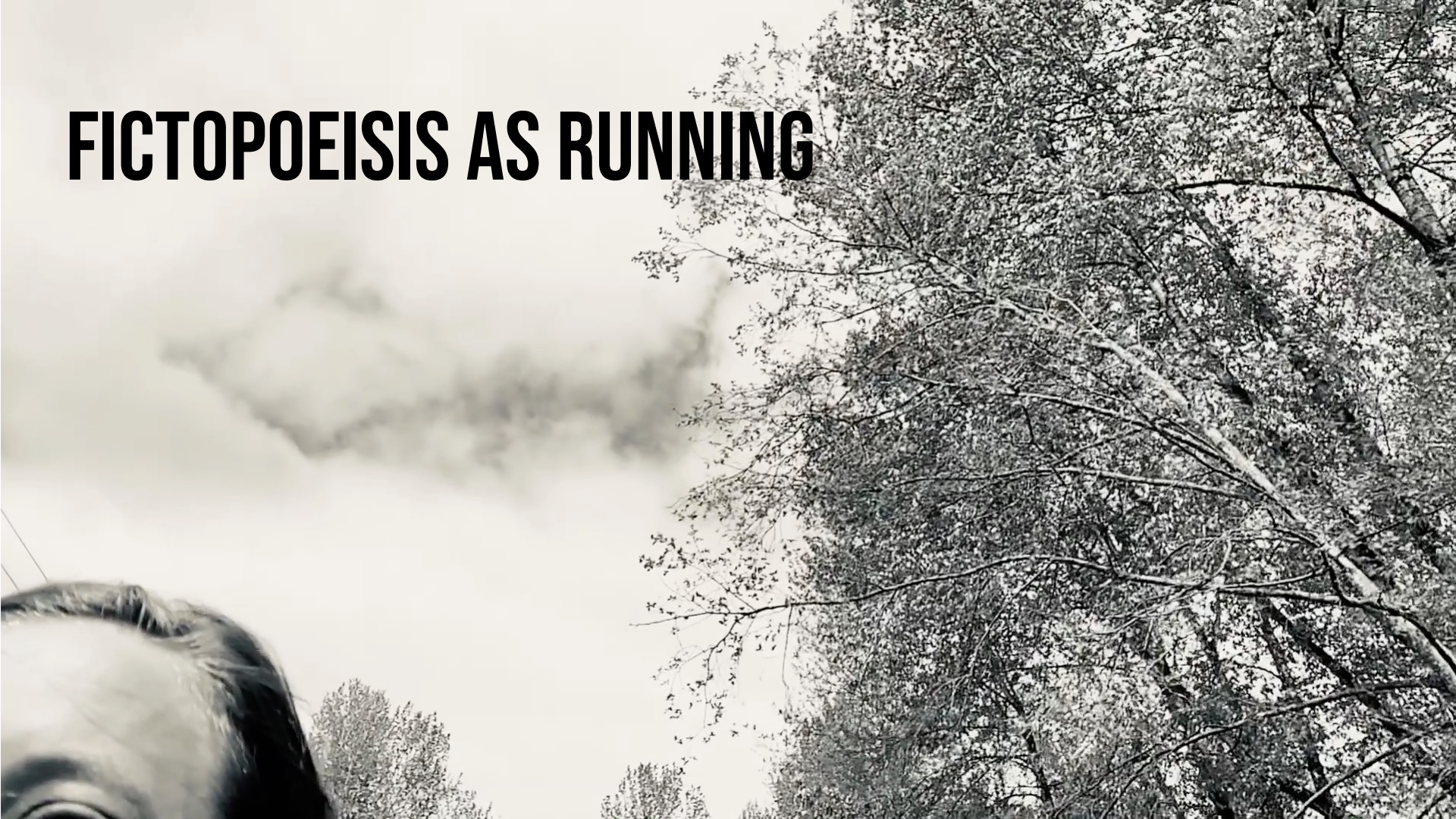
is the bringing forth of new fictions, as *fictions*, to live with, understand the world with and understand the limits of our understanding. Through the practice of fictopoeisis, we model the world as radically open and always exceeding our capacity to represent the way things are and might be.

Other fiction as method approaches:

- design fiction
- speculative fiction
- theory fiction
- science fictioning
- worlding
- science fiction prototyping
- “useful fictions”
- double fiction



# FICTOPOEISIS AS RUNNING





Key themes for digital arts-based research:

- Creative digital methods
- Imaginative data
- Data renderings
- Fictopoeisis

Horst, R. (2023). *Imagining difference. Technological posthumanist methods for arts-based futures literacies research.* *Digital Culture & Education* (ISSN: 1836-8301).

<https://www.digitalcultureandeducation.com/volume-14-5-papers/horst-2023>



“Art-based research can be defined as the **systematic use of the artistic process**, the actual making of artistic expressions in all of the different forms of the arts, **as a primary way of understanding and examining experience** by both researchers and the people that they involve in their studies” (McNiff, 2008).



A low-angle, upward-looking shot of a dense forest. Sunlight filters through the canopy, creating a bright lens flare in the center. The tree trunks are dark and textured, while the leaves are a mix of green and autumnal reds and oranges. The sky is visible through the branches.

DIGITAL ARTS-BASED RESEARCH



Barad, K. (2012). On Touching—The Inhuman That Therefore I Am. *Differences*, 23(3), 206–223.

<https://doi.org/10.1215/10407391-1892943>

Borges, J. L. (1972). *A universal history of infamy*. Dutton.

Deleuze, G., & Guattari, F. (1987). *A thousand plateaus: Capitalism and schizophrenia* (B. Massumi, Trans.).

University of Minnesota Press. (Original work published 1980)

McNiff, S. (2008). Art-based research. In *Handbook of the Arts in Qualitative Research: Perspectives, Methodologies, Examples, and Issues* (pp. 29-41). SAGE Publications, Inc., <https://doi.org/10.4135/9781452226545>

O'Halloran, K. (2023). Posthumanist stylistics. *Language and Literature*, 32(1), 129-162.

<https://doi.org/10.1177/09639470221140693>

Springgay, S., Irwin, R. L., & Kind, S. W. (2005). A/r/tography as Living Inquiry Through Art and Text. *Qualitative Inquiry*, 11(6), 897–912. <https://doi.org/10.1177/1077800405280696>

Tittha Sutta. Buddhist parable of the blind men and the elephant. (Feb. 2018). *Buddhism now*.

<https://buddhismnow.com/2018/02/16/tittha-sutta-buddhist-parable-of-the-blind-men-and-the-elephant/>

Wing, J., (2006). Computational thinking: What and Why?

<https://www.cs.cmu.edu/~CompThink/resources/TheLinkWing.pdf>

Other media referenced or included:

This sculpture is Japanese 19<sup>th</sup> century: <https://www.metmuseum.org/art/collection/search/60194>

<https://newmaterialism.eu/almanac/e/ethico-onto-epistem-ology.html>

<https://native-land.ca/about/how-it-works/>

Three circles animation by Thomas McAdam <https://www.youtube.com/watch?v=rMQNg03UtKQ>

[www.midjourney.com](http://www.midjourney.com)

Patch definition: <https://rolandcorp.com>