# DIGITAL ARTS-BASED RESEARCH IN EDUCATION

#### **Rachel Horst**

Language and Literacy Education Department
The University of British Columbia

rachelhorst.ca

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#### 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 creati៉ុច្សាំ...
- Analysis, interpretation,...
- Representation, rendering performance...





"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"















### **COMPUTATIONAL THINKING**





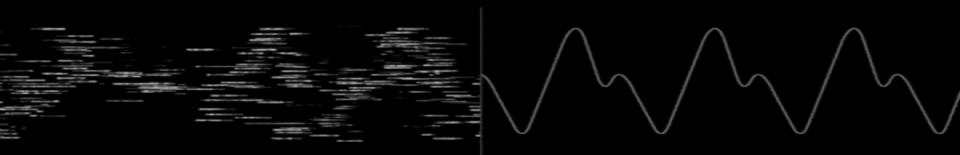


WHAT COUNTS?





"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?

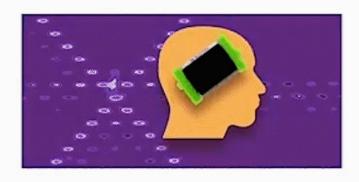
  (Clip shhhhoooooooshshsh)
- Ah, that feels good o my temp is going down. What kind of bit are you again?
- Okay, okay, I accept that you're a bit without colour. I think you're okay but why didn't we know about you before? I mean you fit so perfectly, it's almost like you were meant to be part of our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

William Rowluck











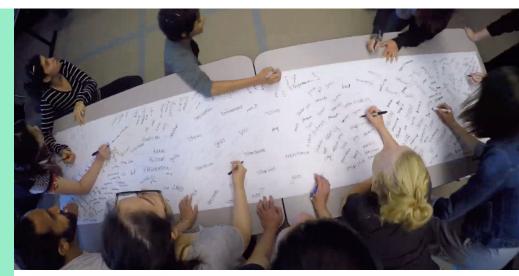


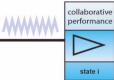
Key points in terms of digital arts-based research:

- 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 <a href="https://doi.org/10.33423/jsis.v15i5.3584">https://doi.org/10.33423/jsis.v15i5.3584</a>

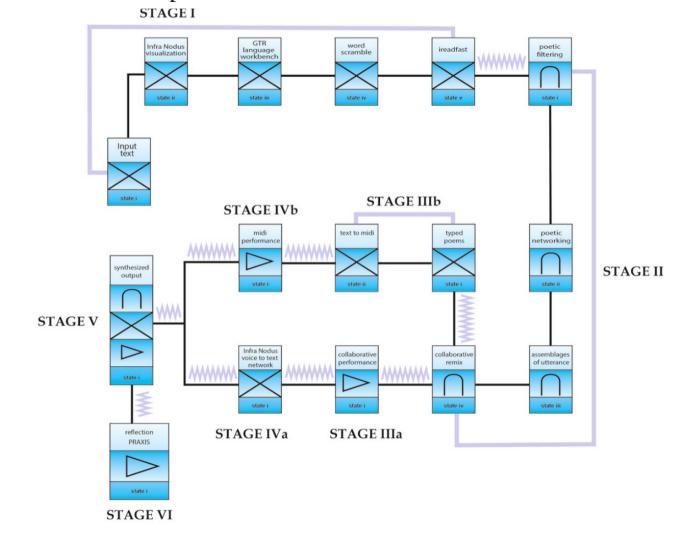
### THE PATCH





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)

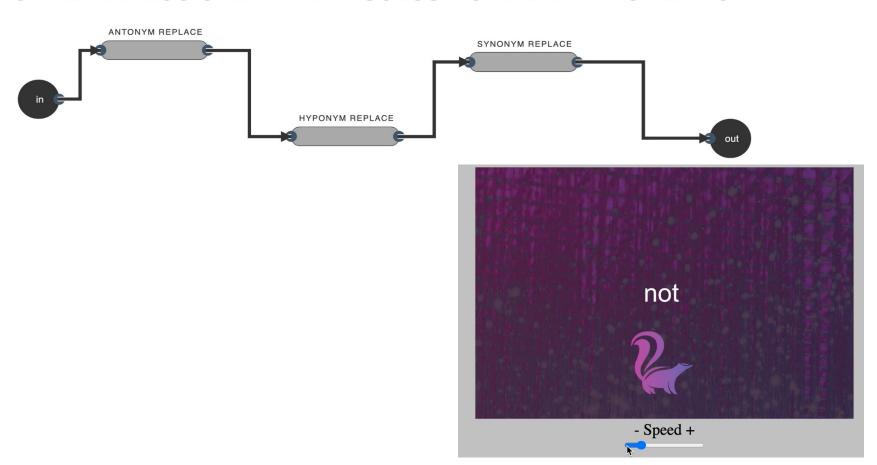


### INPUT SIGNAL

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

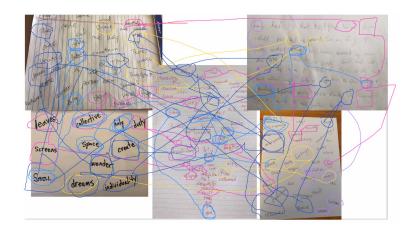
In that Empire, the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province. In time, those Unconscionable Maps no longer satisfied, and the Cartographers Guilds struck a Map of the Empire whose 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)

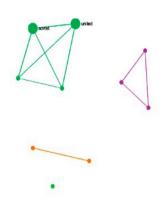
### DIGITAL ANALOG CREATIVE PROCESSING AND DATA CREATION



## DIGITAL ANALOG CREATIVE PROCESSING AND DATA CREATION

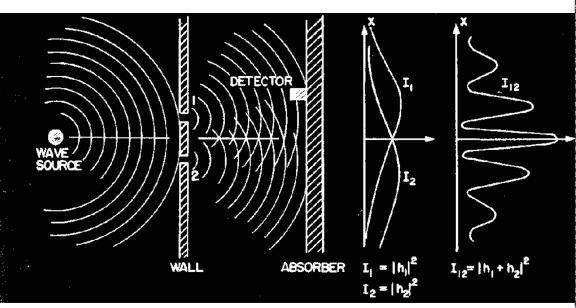








Diffraction "involves passing one text through another, creating new relations and provoking 'ripples' of thinking moving outwards in novel directions... (O'Hallaran, 2023, p. 134).



couldnt see speci nuclear energi seem like incred option littl year ago fossil fuel climat chang final truli sustain energi sourc save took one mistak one mismanag power plant one catastroph nortl america chernobyl look like fairi tale compar wasteland lie us remain tiper begun smash hulk bodi olass whether hunger rage drive neither know care olass enclosur alreadi begin crack zoo built wer glass behind shatter second gone thought remain alway thought resili metropolitan pest feed refus human scaveng forag wast much wast endless gorg mewerend suppli threw away saw flaw finit thless dispos saw susten treasur life live like royalti thought royalti descend fool last ship leav today theyll gone leav tesla flatscreen 35 million waterfront properti well suppos theyr wate ero properti leav us island return sea earth crust call land mass home call back deep core dispos wast island wast wonder death feel like last squar foot land sink dispopear swim float let taken without fight resili conting 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version wish part want mayb someth negoti self that probabl born know know everyth alright make differ start word upon time love us much gave us everyth move toward state transform prepar journey spend larg amount time forest look forest eacher quidanc direct listen read see sign forest communic happen pay attent see trend unfold relat water extinct resili abund reproduct forest indic come defend protect stand listen prove etermin fit still fit world creat tradit knowledg know prevail way adapt place soften defin fit itin time transform tree tri communic gather around tri support tri warm tri prepar love gaze littl we tini human breath notic arm flesh gaze eye wipe clean open see qlanc back walk away long near learn see wit stand outlook bleak world look weak collaps sudden terrifi find write verifi life come year feel like theyv gone piss hope left world ruin man old journal mine time ran ill hide wisdom youth find may shape beauti mind interest planet decid word obsolet convers 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plant would sure die die use cancer wipe treefolk spite spite enemi choos hang technolog magic rather help world heal treefolk good work air clear appar anim start come back even ocean start heal scorch world turn place inhospit plant life near die hundr vear ago thirtvon decemb commune live name mayo one us pass day commune dead decemb end forey big clock tini clock analog clock xhaust deoress downtrodden like string strung tight verg break vet instead stop clock wind even tighter desper hope go final stop pain miseri suffer everi second day blame weak fallibl human trod ighti march hand clock clock go save us miseri firm believ myth two generat sinc revolut clock point histori one hear sound clock tick anymor becom normal part veryday life go person street ask hear tini rhythmic sound tick peopl would look puzzl alarn look think probabl gone mind dream dream there vaou memori past linger keep come back past fill soun iroma sight feel incomprehens dont understand mean behind feel 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shake stomp caress tell bedtim stori ah 163 day accord smudo make indestruct mirror mount wall lab prison spar. . cot mirror corner latrin pod across larg ceram tabl middl room twice day quard emerg somewher wall see differ everi time request report leav ration report alway im tri wont open respons alway see tomorrow disappear surviv war depend abil surviv depend abil actual manifest dad told greatgrandfath swam someth call coral idk someth ocean play old reel depress lot pluppe omplain that call peopl come plug symaps framework come look retro experi creat made one place call forest rain rain forest fuck know countri use call brazil charg harvest iti think amway nome olupper like shit like want see big event past moonland dday 3 cours collags love use plasma oun dont get think experi natur make peopl bad feel everyon feed help see shit plug stop feed bit break interrupt even mods crack quick chickun nugz sensorium cri first time saw old reel world grew much plugger hot outsid cold thought want help share collect memori great grandpar fuck arent mani us left nice escap rememb quess collaps cloud gift collaps collaps cloud limin space grey cloud collaps cloud full love laughter that say wont challeng biggest one behind happi peac form greater stabil trust name game bicoast live oo happen island home full time teach act film tv special man card help inspir instig chang face struggl support strength world continu move smail gace toward ship birth hope isol new root ooh ah extinct speci hamartia hubri ark love without reproduct life withstand time blood stick made flesh salvat use call new faith

Original Alogrithmic Analogue Collaborative Poly-Resingularizations Poetic Node Extrapolations Filtering Poems Networks tattered magnetic maps of socialbeing > Every citizen has an asshole map free social map being in an aesthetic empire Mathematical enterprise, this mapping of today as a being of mathematical aesthetic DLC Soviet builders and the unconscionable mathematical aesthetic Citizens playing into being mathematical entireties The mathematical state resists the singlevalued metropolis Today for free single value satisfaction The single-valued aesthetic of the Metropolis network A contour cartography perfection map Only the maps of society remains ➤ Gen X single conscious romance Single romance conscious network B  $\operatorname{Group} A$ Try to map this vast emptiness My body, a political map. network C The physical elements mapped the way. Cartographer's commute: map. All maps table art centre me you art maps guide political builder society map citizen art maps all subject physical map centre province empire network A Cartography maps mercys business ➤ Its effect a tattered mathematical function ➤ Fraudulent deprivation functions free Group B hits single ultra of the land the land of ultra single shits

network B

conformations

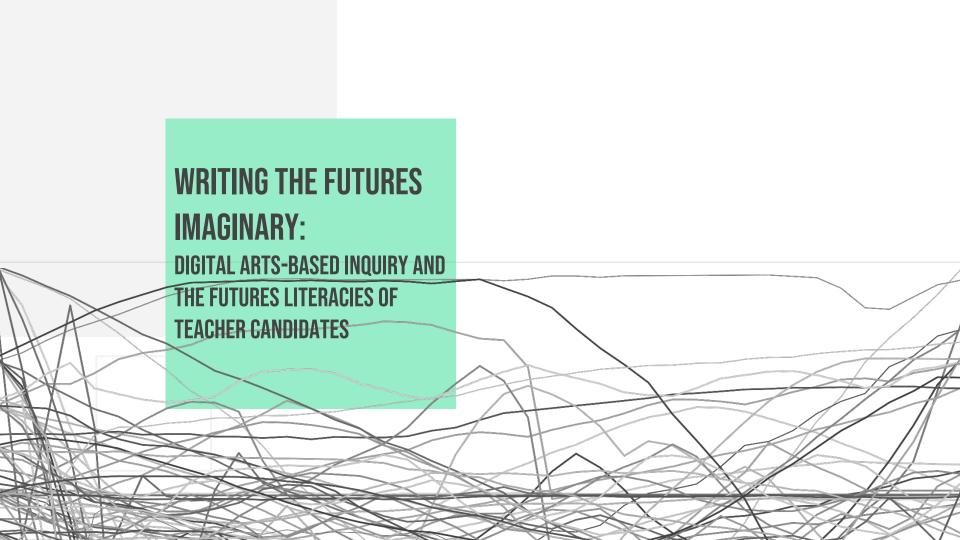




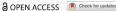
Key themes for digital arts-based research:

- Creative entanglements of the digital and the analog
- Collaborative generation of creative data
- Generative Glitch Pedagogy
- o 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











Rachel Horst (1) and Derek Gladwin (1)

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

#### 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

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#### 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"



[1]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.

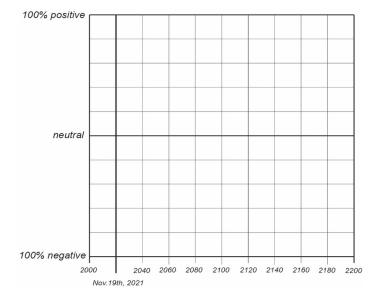
(Wilkie et al., 2019, p. 5)

CONTACT Rachel Horst a mail@rachelhorst.ca Department of Language and Literacy Education, The University of British Columbia, 6445 University Blvd, Vancouver, BC V6T 1Z2, Canada.

#### 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 <u>bumanity</u>* 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.



✓ 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 I don't like my archetype YOU ARE A NEW PATTERN WEAVER trash is another person's treasure and you are interested in discovering and creating treasure. 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.

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

Humanity is over-ratedThe future is post human

The future is a beautiful dream

☐ This place looks way too familiar

Humanity evolves into superior beingsCorporations rule the universe

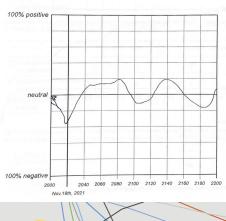
If only we planned for this!Where is everybody?

Al domination

www.futuresliteracies.ca/creative-writing

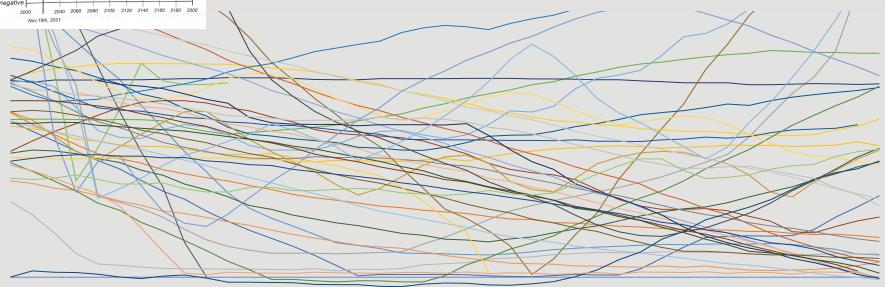


The futures is a few years from now.
You are a species on the verge of extinction.
You are feeling unsure.
You focus your attention upon a song.



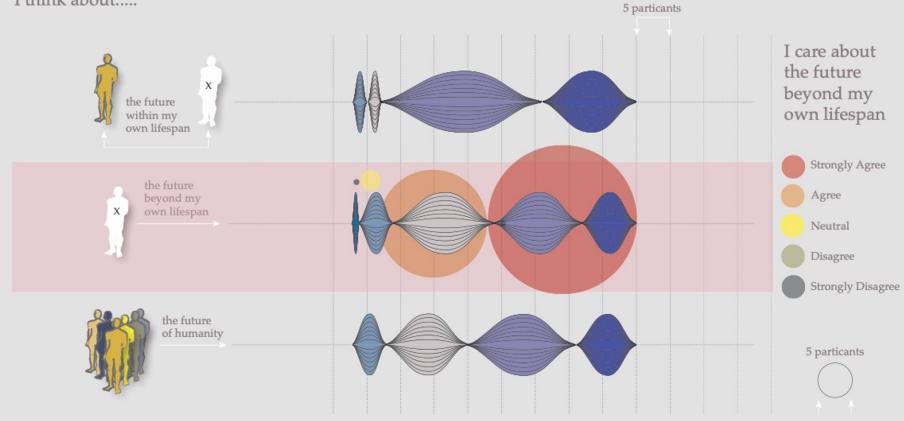
### **DATA RENDERINGS**

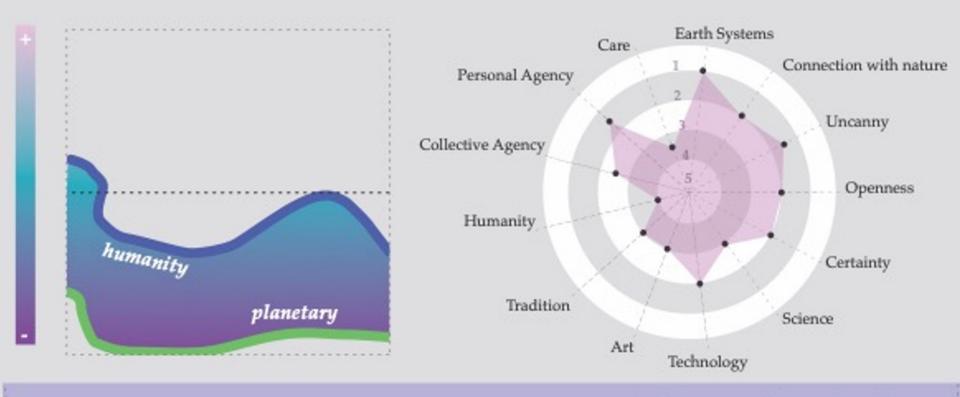
"theoretical spaces through which to explore artistic ways of knowing and being in research" (Springgay, et al., 2005, p. 899).





#### I think about.....





Time is CYCLICAL

Feelings about the future: SCARY, UNCERTAIN, IMMEDIATE Influences upon futures imagining.

- Scientific reports
  - Philosophy
  - · Documentaries



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 an 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
- o theory fiction
- science fictioning
- o worlding
- science fiction prototyping
- "useful fictions"
- double fiction





Key themes for digital arts-based research:

- Creative digital methods
- o Imaginative data
- o Data renderings
- b 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

people' "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). serve



- Barad, K. (2012). On Touching—The Inhuman That Therefore I Am. *Differences*, 23(3), 206–223. <a href="https://doi.org/10.1215/10407391-1892943">https://doi.org/10.1215/10407391-1892943</a>
- 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., <a href="https://doi.org/10.4135/9781452226545">https://doi.org/10.4135/9781452226545</a>
- 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. <a href="https://doi.org/10.1177/1077800405280696">https://doi.org/10.1177/1077800405280696</a>
- 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? <a href="https://www.cs.cmu.edu/~CompThink/resources/TheLinkWing.pdf">https://www.cs.cmu.edu/~CompThink/resources/TheLinkWing.pdf</a>

Other media referenced or included:

This sculpture is Japanese 19<sup>th</sup> century: <a href="https://www.metmuseum.org/art/collection/search/60194">https://newmaterialism.eu/almanac/e/ethico-onto-epistem-ology.html</a>
<a href="https://native-land.ca/about/how-it-works/">https://native-land.ca/about/how-it-works/</a>

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

Patch definition: <a href="https://rolandcorp.com">https://rolandcorp.com</a>