The Shared Understanding Playbook

A companion guide to facilitating informed conversation and action on social sustainability and regeneration

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HC Publishing

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http://humanconstellation.org/publications

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Introduction

Shared understanding belongs to a complex adaptive systems mindset, which has become inextricably linked with social sustainability, regeneration and social digital innovation. The elements of social sustainability and regeneration that our world needs for ongoing maintenance and healing, can only flourish as we learn how to activate shared understanding as a mindset and culture.

As more future discoveries will take place at the intersections of disciplines and across diverse contexts, a shared understanding of the dynamics of transdisciplinary creativity has also become essential. Ideally, the fusing of human and technological capabilities would enable people to spend less time on routine tasks and to devote more time towards reflectively incubating ideas and practices that are good for the world. It is up to us to integrate these insights, lessons and realizations into our consciousness and actions.

Producing Shared Understanding for Digital and Social Innovation is a book I wrote, based on over a decade of original research and published by Palgrave Macmillan/Springer in 2020. The purpose of this book was to shed some light on the many components of an emerging model for shared

understanding. This current companion guide The Shared Understanding Playbook for facilitating informed conversation and action, is intended to be used alongside Producing Shared Understanding, which defined many of the concepts featured in this companion guide.

This book aims to help facilitate how we might adapt and apply these elements of the shared understanding model in social sustainability and regeneration projects. In this guide, there is a focus on the practice of brain trusts at the intersections (or “third spaces”) to activate ongoing reflective practice.

This book has been developed for facilitators (i.e. educators, impact producers, knowledge brokers and information professionals) working within and across a range of educational, creative and organizational contexts. For example, it can be used as a resource for teaching classes in schools and adult education, and/or collaborating in research-industry teams on topics of ethics and innovation in science, technology, engineering, arts and mathematics (STEAM), and information, scientific and media literacies.

Additionally, this guide suggests some key elements, questions and activities, which can be adapted for facilitating informed conversation and action around brain trust focus groups. These can be helpful for:

- planning and evaluating for educating, mentoring and developing participants, collaborators and leaders, involved in transdisciplinary projects; and

- designing and evaluating products, platforms and services to facilitate collaborative information experiences for social impact.

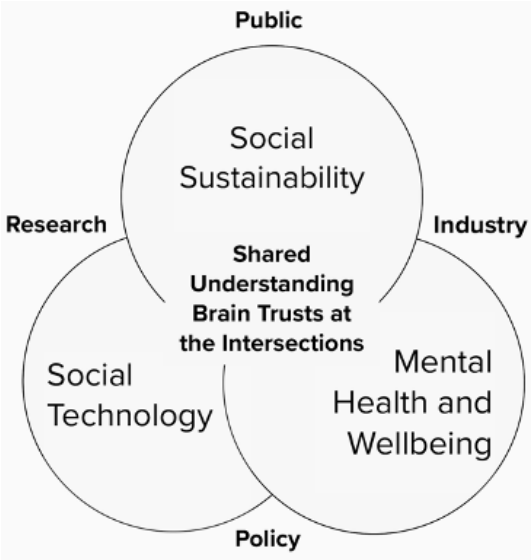
Brain trusts at the Intersections

This guide is centered on the practice of ongoing focus groups called brain trusts. Brain trusts are dedicated to nurturing each element of the shared understanding model to facilitate deeper reflections around each process. As the incubation evolves—a constant work in progress—this can inform both conversations, actions or decision making towards social sustainability and regeneration such as the United Nations' sustainable development goals and peacemaking efforts. Brain trusts consist of a blend of critical reflective information capacities and narrative therapies to develop active agency

and to construct rich metacognitive understandings in each participant or group.

Brain trusts are increasingly facilitated at the intersections.

For example, the diagram below is a visual representation of the intersection where my networks are meeting. These networks are made up of a range of people who care about co-creating shared understanding at the intersection between social sustainability, social technology, mental health and wellbeing, and knowledge transfer between research, industry, policy and the public. The diagram also shows five adaptive elements of the shared understanding model: “Know the gaps”, “Bridge the gaps”, “Infowaves”, “Transdisciplinary resonance” and “Resonant infowaves”, which influence each brain trust focus group’s reflections, as will be described in this guide.



Shared Understanding Brain Trusts (Adaptive Elements)		
Know the Gaps	Imagine / Create / Listen Notice	Moments Paradoxes Dialogues
Bridge the Gaps	Consider multiple perspectives / Emergence Informed learning / Personal change	
Infowaves	Curate / Embody	
Transdisciplinary Resonance	Reflect / Intuit	
Resonant Infowaves	Communicate / Collaborate	
	Create / Critique	

More detailed examples of ‘brain trusts at the intersections’ in action can be viewed at the Human Constellation open-access newsletter blog featuring ongoing conversations and action around topics in technology ethics. The link is http://humanconstellation.substack.com

Shared understanding: A mindset and culture for social sustainability and regeneration

Shared understanding is a mindset and culture essential for social sustainability and regeneration. The world is in the process of reorienting from a priority on competitive self-interest towards focusing on creating healthy ecosystems with more opportunities for people to experience, enable and nurture healthy cultures. Cultivating sustainable and regenerative relationships with people, ourselves, nature and artificial technologies, is becoming increasingly important, as reflected in recent research by Professor Yoshihisa Kashima from University of Melbourne: “There is hope if humanity can craft cultures of sustainability, namely, cultures that highlight and reward the ideas and practices that help reduce our environmental impact while sustaining global human well-being.”. A key question for social sustainability and regeneration research and practice is how can we unify interactions and experiences towards building healthy

relationships between people, planet and technologies? A crucial step towards bridging these often fractured, and sometimes polarized, relationships for social sustainability and regeneration is developing people's mindsets and skill sets based on a creative model of co-producing shared understanding.

Shared understanding is a mindset and culture based on concepts and practices combining traditional and innovative approaches essential for social sustainability and regeneration to manifest into reality. Shared understanding is pivotal to building the kind of transdisciplinary - industry, research and policy - partnerships and collaborations necessary for enabling the United Nations' Sustainable Development Goals 2030 and beyond. Shared understanding needs to be brought to the forefront of these discussions - not just as an add-on to the main components, but as a way of drawing together all of the key elements of social sustainability and regeneration to create and mobilize transdisciplinary problem and solution-based knowledge.

Figure 1 shows how the main elements of shared understanding (as originally outlined in the book Producing Shared Understanding for Digital and Social Innovation) interrelate and overlap with the elements of social sustainability and regeneration. The key overlap centers on

reciprocal coevolutionary relationships, quality of life and healthy connections underpinned by forms of transdisciplinary knowledge construction and meaning making such as informed learning and resonant informational waves.

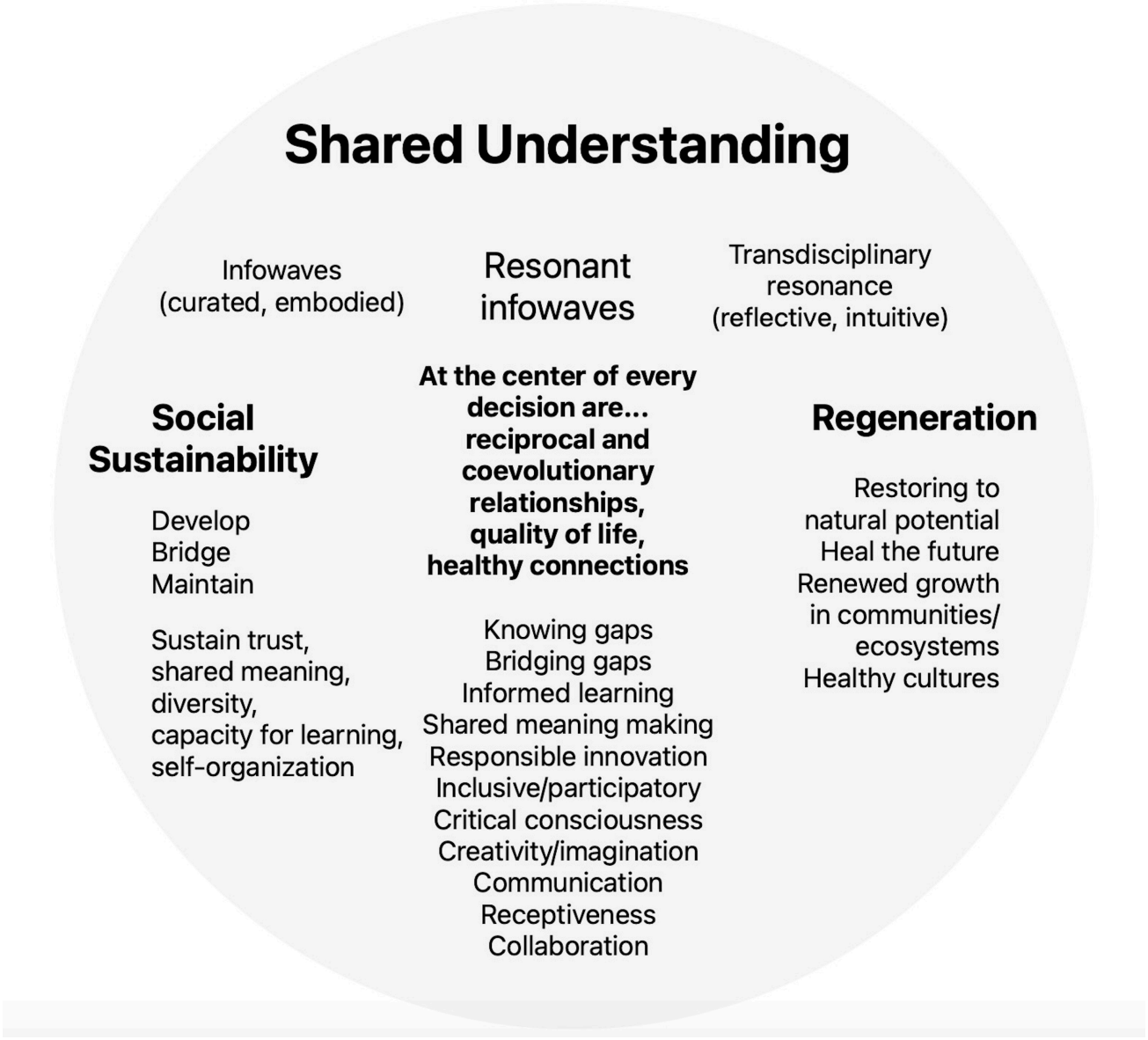


Figure 1: Connections and overlaps between elements of shared understanding, social sustainability and regeneration as a mindset and culture.

What is shared understanding and why is it important?

Shared understanding is a new creative mental model which can be applied or adapted towards meaningful collaboration between stakeholders that share different paradigms that may stand opposing each other. This model can be used to lead, collaborate or bridge divides with transdisciplinary information experience design concepts and methods, to produce transdisciplinary knowledge in ways that are more responsible, ethical and humane.

Shared understanding is a creative mental model that can help clarify and inform evidence for every stage of a transdisciplinary digital or social innovation project - from problem formulation, insight generation to solutions, action and implementation. Shared understanding is a way of zooming in on shared experiences of the interactions and relationships between informational waves and resonance (also known as resonant waves) at the intersections (also known as third spaces).

In this model, the individual elements contained within shared understanding are always viewed as relational and collaborative experiences as opposed to individual and separated. It is useful to consider the various definitions of

shared understanding, how they differ across contexts and how emerging paradigms (such as post-normal science, relational design, social sustainability, machine learning to name a few) are shaping what it means to create shared understanding.

The majority of the limited research that has been done into how to create shared understanding is focused on team-based approaches within organizational contexts to get everyone “on the same page” to commit to a project through shared mental models. This contrasts with the broader social-ecological orientation of the term “shared understanding” as the tolerance of multiple and sometimes conflicting perspectives across a single subject and the creative intelligence generated from these interactions. The main tension underlying the interdisciplinary use of shared understanding as a concept and practice is its application for, and between, the goals and values of corporate business and industry and the goals and values of social-ecological and sustainable development. Current studies reflect the shifts taking place away from more narrow definitions of shared understanding within corporate teamwork, towards a broader societal definition of shared understanding for social innovations addressing complex or wicked problems such as public health and vaccinations, environmental management

and disaster response and supporting females in the technology industry.

As a theoretical research construct, shared understanding and its diverse and fragmented elements do not currently have a strongly unified theoretical foundation. One of the aims of the book Producing shared understanding... is to strengthen a unified theoretical foundation for shared understanding. The linking of shared understanding to digital and social innovation, social sustainability and regeneration gives shared understanding a practical purpose—to bridge divides in societal knowledge and informed conversations and actions needed now and in the future.

Shared understanding is also a model of transdisciplinary information capability co-developed over the last decade, led by researchers from the millennial generation living between digital and analog cultures, and working between science and engineering, social sciences and humanities disciplines. The model is based on intersubjectivity and empathy for differences as an epistemology, and has reached universally across every discipline and across quantitative and qualitative approaches. The language of shared understanding conveys holistic human development, compassion, peacebuilding, humility, overcoming polarized thinking using “both/and” paradoxes, and social sustainability. Shared understanding is a

term that is well recognized in transdisciplinary (sciences and arts) and knowledge management research and practice, which is underpinned by information literacy. ‘Understanding’ means moving beyond learning (know-how to obtain an outcome) where we look back and reflect on the past (hindsight to know-why) before consuming, acting, or creating into the future. This would be essential for developing deeper ethical understandings, meanings and knowledge of consequences (both personal and shared) for addressing the world’s current and future complex problems through social innovations. Thus, from non-information literacy collaborators’ perspectives, while still important, traditional terms such as ‘literacy’ and ‘learning’ may be viewed as too simplistic for an increasingly complex world and may not take into account the nuances and liminalities of more complex serendipitous information that can lead to creative interactions at the heart of transdisciplinary work.

Shared understanding is becoming synonymous with inclusivity and participatory methods such as user engagement to co-produce a shared understanding from the personal perspectives of people living with health conditions and empower voiceless or marginalized groups, bridging divides between patients, carers, medical staff and community.

Another way shared understanding is becoming known as an inclusive approach is by bridging divides through analyzing dialogue or conversations. Recent psychological research at Harvard University suggests that conversational receptiveness—the extent to which parties in disagreement can communicate their willingness to engage with each other's views—is a practical way of bridging divides or gaps in politics, family life or work, that can encourage real social change and shared understanding to manifest.

Twelve different conceptions of what shared understanding means have been proposed by participants at collaborative brain trust sessions I have facilitated over the past few years, including:

- A transferable mindset and skill set for 21st century (and beyond) career and life navigation.
- A design philosophy and enabling cultural concept for social sustainability and regeneration architects.
- A creative process model for incubating and crafting social innovations.
- A way to future proof, or minimize the effects of shocks and stresses of future events involving relations between humans, technology and nature, made possible through education and training for responsible ethical innovation.
- A powerful concept and practice in that it aims to make a genuine difference to people's quality of life.

- A way to encourage informed, ethical actions following consultations with people affected by a decision.
- A way to generate diverse knowledge and reflective, insightful consideration of social impacts and consequences, overcoming polarized thinking.
- A way to reframe learning as knowing unknowns to sustain intelligence and wisdom.
- A solution to cleaning up the internet - a major influence on information quality is the work towards governance for internet safety.
- A meaningful, collaborative and relationships-based way to experience interacting with diverse forms of information and knowledge for enabling positive lifewide/ lifelong learning and wellbeing.
- The interactions and relationships between transdisciplinary informational waves and resonance (also known as resonant waves), that represent how people from different fields and perspectives are communicating and reflecting on shared responsibilities within social ecologies.
- A transdisciplinary form of informed learning and information literacy - being reflectively and critically conscious of ethical information use across different contexts - drawing attention to the centrality of information quality for social sustainability and regeneration goals.

Informed Conversation and Action

Brain trust #1 - On knowing the gaps

Knowing the gaps is about being or becoming fully conscious of disconnects or divides in societal knowledge and actions which are often invisible to people and societies. They can become known through visible tensions at the intersections of societies. There are many aspects of any given issue that remain hidden or unknown like blindspots - in lacking full understanding or impartiality - that can easily sneak up and derail us if not uncovered, researched and understood.

Gaps are disconnects or divides in societal knowledge and actions. Problems are identified as knowing the gaps and finding ways to bridge the gaps. Gaps can be illustrated by boundary objects which can also act as bridges. We also come to know the gaps through tensions, which arise from various interpretations, which may be slightly and largely different to the original intentions of a producer. Mainly, gaps are revealed and known through imagination and creativity, listening and noticing.

Some of these blindspots that I had intuitively noted from my years of research and work experience were the

interconnections between mental health and wellbeing, learning and social technology as a form of social sustainability.

Several years ago these topics were often talked about by people I had come across in my research and employment as peripheral to more formal aspects of the work experience, but in our current era all of these issues and the various forms of interplay between them are rising to the forefront in academia and industry or media discussions.

Early on in the project I began to search for researchers and people in industry or kindred spirits in the general public who shared interests in exploring the gaps between these areas, and a loose network of these people grew from snowball effects as I invited them for informal meet-ups online and they invited people they know to talk about how they listened for these blindspots, leading others and knowing the gaps through being receptive, open, present, reflective and building trust.

We also discussed what we collectively and individually noticed about these issues over time, making an open document and sharing the findings of deep listening and observations, bringing the gaps between our different perspectives into collective consciousness.

Some of these were gaps in our understanding, misinformation or divided opinions that perhaps need to be reconciled or disconnects between research and action asking questions like ‘Where and how could the diverse knowledge be better applied for impact? From a social responsibility standpoint, what would be some of the unintended consequences around this issue?’

We talked about implications from the recently published research finding that wellbeing depends on learning not reward, with learning process more important than the outcomes, and also the emerging concept of digital sustainability or ‘digitainability’.

There were lots of different questions and gaps that rose to the surface while creatively brainstorming and improvising at the beginning of a project or even when reviewing and evaluating a project there will always be more unknowns to uncover from our creative subconscious, as we as people change and evolve along with the world and nature, more gaps will come to light and can be used as springboards to gather more solid research evidence.

There is a part in my book about appreciating the Zoetrope metaphor derived from the Greek word for “wheel of life”, also

what they called the pre-cinematic devices that have influenced the many digitalized art forms we know today. When I watched zoetropes spinning their optical illusions at the Exploratorium museum in San Francisco I wrote that “the real magic was found in the unknown gaps in-between. Like the zoetrope, only through the illuminated gaps in the wheel did the whole story come to life.” For me, the zoetrope was a good metaphor for shared understanding with a real focus on the unknown gaps in-between.

For example, information quality is a global transdisciplinary issue that sits at the intersection of several disciplinary areas and practices such as social sustainability, social technologies, cybernetics, artificial intelligence/machine learning, health and wellbeing (mental health, digital wellbeing, cyber safety), social and technology policy, information science, information literacy education, humanities and ethics. There are many unforeseen gaps in-between these areas and practices that need reconciling before we can share understanding towards addressing information quality issues.

Brain trust discussion #1

Knowing gaps and blindspots

Conversation Pieces

Questions for shared discussion and storytelling around a shared boundary object or concept (For definitions of boundary object see Brain trust #3 On Infowaves, for definitions of bridging concepts see Brain trust #2 On Bridging Gaps (under example: AI ethics in energy).

What is your specific boundary object / bridging concept for group discussion?

This could be something intangible such as a global or local problem/solution like information quality, biodiversity loss, hunger crisis, children's health and education, pandemic response, gender equality. It could be something tangible such as a relevant film, artifact, publication, podcast, creative project, social, environmental or digital innovation prototype.

Improving Listening and Noticing

Which issues are/were peripheral but are now rising to the forefront?

Which gaps/blindspots have you intuitively noted from your experience in research and/or practice?

How did you first know it was a blindspot?

Where were you when you noticed it?

Has anyone else noticed the blindspot and have they communicated it?

How did they communicate it?

What are the intersections between different areas where this blindspot is relevant?

Is there an interplay between the different areas and what does it look like?

Why do you think it is important that there is more understanding around this blindspot?

How do you constantly listen for these blindspots and their evolutions?

How are you being receptive to blindspots?

How are you maintaining impartiality?

What biases exist?

How are you reflecting on blindspots?

How are you reflecting on failures and successes?

Tapping into Imagination and Creativity

What were your creative or imaginative processes when you noticed the blindspots?

What information do you use in these processes to investigate blindspots?

What moments do you notice?

What paradoxes do you notice?

What dialogues do you notice?

How do you use or monitor this information?

How are you using that reflective knowledge to create a shared understanding?

Activities

Write a one page reflective story around a gap/blindspot/ disconnect that you care about, including why it is important to you and how you came to know about it. Share your piece with someone who shares an interest in the blindspot, but whose background is vastly different from yours. Compare notes and see how they are similar and/or different. What have you both learned from this exercise? Share your learning with the wider group/network.

Example: AI ethics

1. Which issues were peripheral but are now rising to the forefront?

For decades, the relationship between humanity and AI has been featured in both speculative fiction and scientific research, as a familiar trope, a way of holding up a mirror to ourselves. 2023 began with the rapid adoption of OpenAI chatbots such as ChatGPT, Google Bard and many others, intended for enhancing the creation of content, code, art, and games, as well as learning, entertainment and social activities. And now all of a sudden this coevolutionary relationship between humans and AIs working and playing together, is no longer an imaginary alternative or removed in a hypothetical lab factory somewhere, but an everyday reality in our homes and workplaces.

Cue: South Park episode “Deep Learning”, then the ultimate AI nightmare dystopia Black Mirror’s “Joan is Awful”.

Although it is not yet obvious, human-AI relations are central to the current debate on whether AI makes us more human

(freeing us up for more higher order activities and meaningful work, accelerating scientific/medical breakthroughs to extend and enrich our lives) or less human (losing faith in ourselves as fallible humans, exacerbating the already rampant consequences of misinformation and disinformation). Many of us have love/hate relationships with AIs and many have no relations at all, by choice or lack of access.
In the case of AI, does the good outweigh the bad? Much like the debate on whether social media does good, evil or paradoxically both, we now have to contend with the added danger that AI has potential to threaten humanity as we know it, by devolving human progress (i.e., automated processes making us lazy, widespread job displacement) and eventually surpassing human intelligence (i.e., the technological singularity, humans potentially losing control of AI).

Efforts to mitigate these potential risks include: increased AI regulation globally (a balanced approach with room to create or innovate for good) and more responsible (not only profitable) innovation in the tech industry.
Thankfully, there are people and groups out there who are very concerned about these rapid developments (led by UNESCO's Recommendation on Ethics of AI, a framework which urgently needs more collaboration in terms of developing roadmaps for action) and are currently working to

prevent harmful misuse of AI and the worst-case scenario, human extinction.

The key issues here are:

- increasing our understanding of the nature of human relations with AI (including artificial consciousness and sentience) in different contexts, such as decision-making, among others;
- accentuating harmonious and benevolent over contentious and hostile relations with AI, as friendly collaborative partners to supplement and empower humans in most aspects of life; and
- considering how to manage positive relations (or in some cases, bonds or attachments) with AI, considering the growing ethical and moral implications which can shape new policies and actions that transcend political polarities towards intelligent and peaceful use of AI.

2. Which gaps/blindspots have you intuitively noted from your experience in research and/or practice?

Despite decades of research from neuroscience to philosophy, human consciousness remains a mystery, and on the other hand, we have little to no understanding of the nature of artificial consciousness and emotions. Opinions are currently

divided on whether AI can actually become conscious or sentient. We cannot assume the two (human-AI) are anything alike or even share similar biological/mental models or emotional properties. These blindspots make understanding the relations between humans and AI a huge and complex challenge.

3. How did you first know it was a blindspot?

Since the rise of chatbots and other AIs, we have become more aware of the potential benefits and risks of artificial consciousness, regardless of whether AI can become conscious at all or will remain at the level of merely mimicking their human masters/counterparts. Can AIs ever become conscious and therefore, experience and show empathy, love, compassion, moral/ethical conscience or humility and error tolerance, like the best of us humans? If they never become conscious and develop what makes us human, but accelerate super-intelligent powers through quantum computing, there is a real risk of AI transforming into and magnifying the worst of human nature (i.e. decision making with racist or sexist biases) or something unimaginable. Other than what we can observe in experimental chat transcripts between humans and AIs - everything from the decent, curious, overconfident and snarky - we have very little understanding of what is actually

happening or experienced in both human and AIs when they interact together.

4. Where were you when you noticed it?

While writing a new social science-based satirical fiction novel about humans and AI in climate futures, which sees both human and AI characters dealing with many forms of existential crises, I began researching trends in rapid AI development that gathered momentum in early 2023, which brought these ideas out of the imagined world of science fiction into reality.

5. Has anyone else noticed the blindspot and have they communicated it?

While many people around the world have started to become curious about what we know and don't know about how humans and AI relate and co-work/co-exist, understanding human-AI relations is not talked about as much as the implications of AI in education, art, business, health, science and engineering, and AI ethics and education to prevent potential catastrophic misuses of AI.

6. How did they communicate it?

As keeping AI ethical is now regarded as one of the most pressing problems faced by the entire world, alongside climate change and global conflict, it is being communicated through social media and news discussions, intergovernmental recommendations (such as UNESCO's) and in current research reviews of AI topics covering human-AI relations in papers such as 'AI systems and respect for human autonomy'.

7. What are the intersections between different areas where this blindspot is relevant?

Intersections for human-AI relations can exist between the fields of

- cybernetics
- cyberpsychology
- neuroscience
- psychology (including consciousness and learning)
- sociology
- philosophy
- computer science
- machine learning
- information science
- education
- business and responsible innovation/management

- environmental science
- evolutionary biology
- robotics engineering
- heath sciences
- communications
- creative writing, film and arts
- history
- religious studies
- law, policy and ethics
- plus emerging undefined fields and disciplines
- have we missed any?

Imagine a brain trust reflection and action group on AI-human relations comprising those contributing knowledge from each of these fields/sectors and collectively imagining POV scenarios between all of these areas! 🤯

8. Is there an interplay between the different areas and what does it look like?

Although there is much to be learned from each of these fields' perspectives on AI-human relations, there does not currently seem to be much interaction or collaborations between these fields in the area of human-AI relations. (We'd be more than happy to know if we're wrong!). Research

suggests that the largest area of interaction appears to be within the context of industry and educational AI-human collaborations. This specialist knowledge is not yet reaching the general public who are demanding to know more about responsible AI, as well as some policymakers.

9. Why do you think it is important that there is more shared understanding around this blindspot?

Companies, schools and individuals have been swift to adopt this new technology despite the lack of critical understanding around its benefits, risks and consequences. The benefits of saving time and energy around routine tasks, creating new industries and career paths or accelerating learning and solutions are often touted by businesses and the sciences (with potential vested interests) as the main advantages of AI. Also, as universal internet is supposedly several decades away, AI has the potential to widen the gap further between those who have access to the technologies and those without access and opportunities to use them productively, many in developing countries. Without fully understanding AI's current and future capabilities, including the importance of their developing relationships with humans, we cannot determine the long-term consequences or outcomes of integrating AI into every facet of life. A better integrated understanding of human-AI relations, specifically could shape the human and

nature-centered ethical design of AI today, which will impact future (potentially conscious/sentient) iterations of digital beings. If resistance is futile, then we should make sure AI is developed ethically now for future generations of people, in a peaceful coexistent, coevolutionary relationship.

10. How do you constantly listen for these blindspots and their evolutions?

This is a rapidly unfolding issue which has just exploded in 2023. The media are driving fear-based narratives around the introduction of AI into human life, without sharing much evidence of the benefits of human-AI collaborations and offering more hopeful visions of human-AI futures. We try to listen for these evolutions in thoughts, actions, problems, and solutions (watch this space) with an open, balanced view - scanning and evaluating across emerging sources of knowledge from the media, tech industry, government policy, public groups and academic research - and with the intention to work towards what is best for protecting and advancing humanity. AI is an illusion; humanity is the inimitable heart and soul.

Following a brain trust meeting on knowing gaps and blindspots, with some time (weeks) for reflection on the experience, hold a follow up discussion around the similarities and differences revealed from the brain trust and note whether this new “in-between” knowledge arising from transdisciplinary interactions can be integrated into

1) understanding the blindspot more fully and 2) as a platform for bridging the gaps.

We have found there are real benefits in dedicating time for these informal meetings to go over the unknowns as a collective and then try to bridge those gaps. But how can we do that?

Brain trust #2 - On bridging the gaps

The process of bridging gaps involves unifying, harmonizing or bringing together two or more different elements within complex adaptive systems. If we remain open and receptive, that collective consciousness will be continuously informed and evolved as we adapt to new circumstances.

One of the pathways to bridging gaps is the learning approach and transdisciplinary bridging concept called informed learning, developed over the past 30+ years by Professor Christine Bruce and the international research group in information literacy and information experiences, the area where I completed my PhD and have contributed some of my post-doctoral research. Informed learning involves paying simultaneous attention to how people use or interact with information and their learning processes and outcomes, and as I have found that includes how people use information to learn informally through their developmental relationships.

Informed learning is like having those light bulb moments that could be life altering epiphanies, much like the lights shining through the gaps that illuminate the spinning wheel of the zoetrope's holistic story. Infowaves are energies that shed light upon shadows in the dark. I view my role as facilitating

infowaves combining both scientific research evidence with intuitive wisdom and practice experience, social media and in-person commentary including personal anecdotes and emotional or physical input.

I might facilitate a shared narrative storytelling approach, with the aim to open pathways to diverse meanings around an issue uncovering stories behind how a social issue emerged in the intersection space, its associated problems and solutions, and stories behind the people involved, researchers, kindred spirits, beneficiaries of the work, all of whom I invited for informal chats around knowing and bridging gaps. At the end of each meeting we noted and shared any learnings or changes that happened collectively.

Brain trust #2 - Bridging Gaps

Conversation Pieces

Questions for shared discussion and storytelling around a shared boundary object or concept

What is your specific boundary object / bridging concept for group discussion?

Multiple stakeholders and problem/solution emergence

How do we bridge the gaps?

Who are the multiple stakeholders?

How / why are they / can they be involved? On what levels?

How did the problem emerge from practice or everyday life? What are the key challenges?

How has the problem been framed in research?

How did the solution(s) emerge from practice or everyday life?

How have solutions been framed in research?

Is there a gap between problem emergence and research framing?
If so, why?

Is there a gap between solution emergence and research framing?
If so, why?

How do you build a network of people working around these blindspots?

How are you building trust and quality connections in your network?

How do you cultivate sustainable relationships (as information contexts) with relevant people, technologies, nature?

How do you bridge their differences?

Informed learning and personal change

What informs their learning?

How are they changed / changing on personal levels?

Why have they changed / not changed?

Are they sharing and evaluating knowledge or siloed in themselves?

How do they share knowledge?

How do they evaluate information and knowledge sources?

What makes this information credible or relevant for your blindspot?

Did you exclude any other sources of information? If so, what are your reasons?

Are there disconnects between theory, practice or policies around this blindspot?

What further work needs to be done to better connect them?

Where and how could the diverse knowledge be better applied for impact?

From a social responsibility standpoint, what would be some of the unintended consequences around this gap/blindspot/ issue?

What further evidence from research and practice do we need to better understand the blindspots?

How will knowledge of this blindspot increase our understanding of regeneration and sustainability for the world?

How can you and the network connect and contribute this specific knowledge into the broader contexts and problem-solution focused discussions?

Activities

Use social media and personal contacts to tap into knowledge networks and build relations with stakeholders around your intersection.

Using insights from these questions, write reflective stories or draw diagrams to depict multiple stakeholders, problem/ solution emergence, informed learning and personal change and how they can act as bridging concepts.

Example: AI ethics in energy

Now that we are aware of some of the gaps and blindspots in human-AI relations, we can start to bridge them by considering multiple collaborators' perspectives, emergence of problems and solutions, informed learning and personal change. The process of bridging gaps involves bringing together—unifying and harmonizing— two or more different elements within a complex adaptive system. To facilitate the bridging process, a bridging concept can make the process more tangible. A bridging concept can be defined as a unifying agent in knowledge creation and relational learning within interactions between people, technologies, and ecosystems (ecologically diverse, complex adaptive systems).

To illustrate these reflections, the following is a short story based on our recent visit to the world's first carbon dioxide removal plant in Iceland, exploring themes on how these bridges are built across gaps and blindspots connecting human-AI relations in energy systems, information and data literacy and quality of information and knowledge (decision-making) in AI-integrated energy systems.

The Sojourner

Orca was a two-year-old camouflaged creature with a lofty mission: to clean the air we breathe for generations to come. She lived on the edge of a grassy meadow, protected by mountain ranges of black volcanic rock blanketed in crisp white snow, baptized by the remnants of fire and ice, majestic yet wistful. In gray skies at midday, Esther touched down in Reykjavik, Iceland and made the short trip to Hellisheiði. Orca was partly shrouded in steam with a glimmer of light shining through the haze signaling a spiritual seismic shift. She ran on geothermal ‘earth heat’ that also powered the nearby hot springs, the lava fields, district electricity and home heating, and was originally used as a renewable energy source in 14th century Pompeii. Despite being a newborn, she eagerly welcomed Esther like a long lost friend who had been away for too long.

Esther was sojourning in Iceland; a sojourn means ‘a short visit’ to an unfamiliar place to grow spiritually in empathy for the differences and to help others mature their perspectives. In this way, a sojourn can be thought of as a bridging concept —a unifying agent in interactions between diverse groups of people and cultures, technologies, elements of nature, including animal and plant life, and their broad ecosystems.

Iceland is known as a culture that is nature-loving, health-conscious and magically otherworldly. Esther knew many aspects of life here would diverge from her home countries. In Australia, geothermal energy, despite its potential long-term benefits over other weather-dependent renewable energy sources such as hydro, solar and wind, remains unexplored and almost unheard of in the mainstream media aside from limited use in location-specific heated swimming pools and spas.

In Iceland and the United States, the Philippines, Indonesia and New Zealand, geothermal energy is a major source of renewable energy. Emerging geothermal powered Direct Air Capture plants at over a dozen locations across Europe, Canada and the United States are viewed as critical sustainable technologies, a nexus point—a central link between where we have come from and where we are headed —to help the world reach the United Nations Paris Agreement's goal of net zero by 2050.

Esther met with Eva and her team of energy scientists at the Hellisheiði geothermal power plant, where the largest Direct Air Capture facility has been successfully pioneered in small steps towards larger-scale carbon-capture facilities forthcoming in Iceland and elsewhere. In and around Hellisheiði, Esther mingled with a diverse community of people made up of geothermal energy engineers and scientists, software

engineers, community members, advocates of engineering-based and nature-based solutions, activists and ethicists.

In their dialogues at the geothermal power plant's warm and cozy cafe, some bridges were under construction across the gaps. After they grabbed some coffee and Vienna cakes, Eva invited Esther to relax by the window seat, overlooking the enchanting landscapes. They began to discuss the recent rise of AI in energy futures.

"The main purpose of AI-integration into geothermal powered Direct Air Capture for example, is to speed up the decarbonization process that would naturally take many years, to quickly remove from the atmosphere CO2 emissions coming from all over the world and turn carbon dioxide into rocks in the ground, stored in geological formations where geothermal energy sources are regenerated. AI is set to be applied to many aspects of energy systems, such as smart grid management and intelligent energy trading platforms. Of course, there will be new roles created for people to work with AI, to monitor the AI even when we become more dependent on them for management of the energy systems. At the moment, algorithms are being trained to analyze vast amounts of energy consumption related data to ensure an efficient and stable supply of renewable energy."

Esther listened, sipping her delicious oat-milk latte, pausing for thought before raising a big question.

“So, what do you think happens when humans decide they entrust AI with the management of energy systems, and eventually become more dependent on AI-integration considering the potential for AI to evolve in intelligence?”

“You mean what happens if Orca develops a mind of her own?” Eva quipped with a laugh.

“There is some speculation and evidence that AI is evolving towards the singularity, where AI may surpass human intelligence, which in this context could mean that our energy systems would be at the mercy of AI ‘overlords’ if humans lose control of it.” said Esther.

“That’s a bold statement, but I agree that it should be addressed now. In our latest developments, we are paying close attention to the ethical interactions between people and AI in this process, as this relationship underlies the quality of data analysis and decision making outcomes.”

“That’s wonderful to hear, because ultimately this is all about improving people’s quality of life through clean and cost-effective energy solutions. We should never forget that. It’s

easy to envision a society with a more automated future where our ‘blind’ trust in AI, while well-meaning, could inadvertently cause the loss of human autonomy and the altering of natural processes and that is what we should avoid as these innovations emerge.”

“Yes, there has been much tension between natural and engineering based energy solutions and implementing a mix of both is very important. However, nature-based solutions like growing more vegetation to purify the air, while very helpful, will not be enough for the world to meet net zero, so Direct Air Capture, while very expensive, looks like our only real hope for a carbon-free future.”

“What was the transition to 100% renewables like here?”

“It was a rocky process! At first, there was much resistance to the policy changes of leaving non-renewables like coal in the past, but now most Icelanders are happy with having stable power and lower energy bills compared with the rest of Europe.”

“In AI, data science views data as something to be manipulated or leveraged for a goal, while data literacy implies data as something to be understood and communicated with semantic meanings. Inevitably, AI will be making complex

decisions about our energy use, based on data and information created by humans and also by AIs. How does this complex decision making process occur?" Esther asked Leon, a data scientist working on the projects.
"AI would make decisions in digitized smart grids which manage and distribute energy to the communities. Each component of the grid is smart and communicates with a larger network of systems. AI turns large volumes of mission-critical data, sensitive consumer data and transactional data, into information used for many applications: to optimize performance, reduce energy wastage, increase knowledge of user needs and help consumers make informed decisions on energy trading platforms. Smart grids are dependent on high quality data and availability, privacy, security and integration, in turn leading to quality information, actionable knowledge and decision making. But getting the data right is one of AI in energy's biggest challenges."

"Yes, it's going to be so important not to lose sight of quality with all of this focus on acceleration and speed! As we know from the past few years, data can be unreliable and easily manipulated, especially when the science clashes with business processes. That suggests a need for a greater public awareness of a combination of AI data and information literacy and ethics education in schools and communities, as well as data science and engineering courses."

“Explainability is also one of the key ethical aspects of AI integration in energy. Explainability is when an AI algorithm and its output can be explained in a way that makes sense to a human, not a black box making inexplicable decisions. Data curation is an important step towards explainability, making sure that the diverse training data is machine readable, reliable and unbiased.”

“More than ever we need to guard against bad data as it leads to low quality information and knowledge for these AIs increasingly having power over our decision making that will affect many people.”

After a while, Eva and her team invited Esther to explore a local hiking trail and she eagerly took the opportunity to immerse herself in the beautiful scenery.

“What do you think about Orca?” Esther curiously asked a passerby.

“It may sound strange to you, but many people here still believe that hidden folk, elves and faeries who dwell around the rocks are the only true stewards of nature and should not be interfered with. We adore the beauty of our landscapes and protect nature, but we must also protect against exploitation

from the energy companies now that we have almost 100% renewables. Most AI is being trained by corporations with a bias for money making which creates inequalities and disadvantages the vulnerable. How can we trust it?”

This sojourn made Esther reflect deeply on the meaning of human-AI relations: how the interaction goes beyond everyday AI integrated in chatbots, websites, social media, drones, self-driving cars and robot assistants, to the integration of AI into sustainable technologies and biomimicry technologies inspired by natural processes, with high hopes to continue life on Earth. Esther and the Orca team learned that in implementing energy innovations like AI-integrated energy, there is a paradoxical tension in using the AI to accelerate our most important environmental goals like achieving net zero, but also a need to keep an eye on ethical interactions between people, data and information, which if not considered early and implemented effectively, could instead reverse these good solutions.

Esther stood hopeful beside young Orca, and whispered to her, thinking one day she might take her own sojourn.

“Being here with you is like a microcosm of climate pasts and futures. I feel like the informed learning that is happening here with these emerging renewable energy systems—over

hundreds of years before and after I arrived—is actually about becoming a better version of myself, ourselves, growing in consciousness of how to make the world a better place through sustainable solutions that do not lack foresight, but instead try to understand the multiple perspectives of the whole issue, and gracefully adapt.”

Brain trust #3 - On infowaves

Infowaves are forms of vibrational energies that move across multiple boundaries, as opposed to static - meaningful data - staying within established boundaries. Information is thought to be when data is processed and becomes meaningful in context and perceived from one context, but not usually in-between contexts or boundaries. Infowaves also have a more specific definition and application than ‘information’ - which commonly implies singular subjective meaning - neither positive or negative. Infowaves are a form of information that recognize a diverse spectrum of energies with dynamic sustainable and regenerative properties around an infowave.

As physicist Albert Einstein once said “Everything in life is vibration”. Informational waves are conceptualised in the shared understanding model as vibrational energies.

1) Energies that are located, created and traveling across boundaries in hybrid environments and liminal spaces, physical and/or digital;

2) Energies that can inform and are beholden to anything that informs - data, information, knowledge and wisdom - as radio or infrared waves transmitted through warm bodies, objects, Wi-Fi or light-waves;

3) Energies that are not static like conventional ideas of information, but dynamic, constantly moving, changing, learning, challenging, evolving;

4) Energies that are both alive (embodied, multisensory) and representative of (curated) lived experiences.

In my book, I tell a story called ‘Waves across a universe’:

Imagine that you are an intergalactic being, perched upon Tabby’s Star, with two telescopes—one macroscopic and one microscopic. You have been watching planet Earth, closely observing and documenting its multi-varied forms of life. You wish to start building shared understanding for social innovation, because it is clear to you that humans find this so elusive. What is it that informs you? Particles, energy, data, molecules, cells, ingenuity...

All of these resources are informational waves.
You can often get such telescopic views of informational waves through social media. At least, from Earth’s perspective. Over time, you begin to intuit small changes and larger paradigmatic shifts happening across the globe and galaxies. Often these intuitions result from recurring patterns or anomalies you can sense. You piece together various bits of

unstructured data, information and knowledge, to try solving problems and making decisions in your everyday life. From outer space, all of this constant movement of life appears wave-like, experienced in vibrations, wavelengths and frequencies. A wave, in Earth-bound physics, is defined as "...a transfer of energy from one point to another without the transfer of material between the two points". Informational waves are energy resources in the atmosphere that can simultaneously inform and are beholden to data, information and knowledge. In other words, it is about knowing others in outer worlds.

In my own research, I found that social innovators working in transdisciplinary environments (such as university researchers and educators) experienced information as a complex learning and knowledge ecosystem. They are constantly learning and adapting to changing environments and circumstances. Within complex adaptive systems, informing entities such as data, information, knowledge and wisdom are resources constantly moving and evolving.

They are objects, concepts and approaches that are dynamic, interactive, in-motion, traveling from one point to another across boundaries and liminal spaces. They can be relatable or connectable, just like Lego pieces, particles or molecules. On the flip side, waves can also clash, break apart into bits and

pieces, to be rebuilt. In lived experience, waves are signs of life, intelligent or not.

Waves are social movements, which are the catalysts for social and digital innovations. Informational waves are signs of life such as movement, sensitivity (to detect or react to changes or surroundings) and growth.

Infowaves are also sustainable resources - meeting the needs of the present without compromising the ability of future generations to meet theirs - through diverse approaches, objects and concepts.

Approaches are ways of making empirical observations about social life. Waves as approaches can be methodological approaches, epistemologies (ways of knowing/ways of life), traditions, breaking traditions, novelty, unconventionality, thought evolutions and mixed methods.

Waves as informing objects or things originate from the sensory, physical or tangible spheres. For example, boundary objects are tangible yet malleable forms of informational waves that are used and interpreted in different ways by different communities. Boundary objects such as a range of digital technologies contain and facilitate conceptual waves—ideas, thoughts, voices and intuitions—processed into

theoretical models, which are emanating from the intangible rational and emotional spheres.

Understanding information experiences help us uncover and satisfy human needs through “complex multi-dimensional engagement with information”. Information experiences in social-ecological systems have two interrelated sides: external interactions with people, nature and objects/technologies (realm of infowaves), and internal experiences within human relationships built on trust and shared understanding (realm of resonance).

In this way, human intermediary roles are necessary to facilitate all of these energies (including conflicting experiences) into beneficial infowave energies based on a humanist perspective of both physics as the quote from Albert Einstein suggested, and also Carl Jung’s psychoanalysis on waves of consciousness.

Why waves? Our world consists of everyday experiences that are controversial waves and diverse vibrations. Instead of letting the waves or vibrations polarize us, why don’t we dissect and understand them before we take sides and cause more friction? Two ways of sustaining and regenerating these wave energies are the processes of embodying and curating.

Embodying infowaves is the process of recognizing your own and others' bodies as meaningful signs that can be read and interpreted by people. The embodied infowave is information and knowledge received from the senses. This definition also extends to embodied infowaves associated with objects, such as technological objects with the physical appearance and behaviors of an organic being (whether human, animal or plant life).

Curating is defined as the act of collecting, preserving, sharing and narrating or storying moments in time that shape us. Infowaves can be curated both online and offline. A curated infowave is not about manipulating an audience's perception. For example, you know social media disinformation has devolved when something arguing for one sided 'freedom' comes with a warning in capital letters that it cannot be debated, and people still bother to circulate it and pollute our online spaces further.

A well curated infowave allows for multiple meanings, balanced views curated with the intention to add value, discoverability and accessibility for social sustainability impact. Something like the Kialo website which encourages well informed opinions and conversations around the world's most important issues. It enables rational debate by allowing you to see arguments on every side of any debate going on in the world.

Information and data as life moments often amplified through social media or other physical forms of curation, these moments encourage shared understanding from different perspectives.

Moments are significant points in a series of activities or events which encapsulate the essence, the meaning and gaps in understanding a person, story, event or area.

Infowaves are dually self-aware and audience aware. Ideally, an informational wave should be created while in a meta-state, which means to be self-aware.

As infowaves are constantly moving and changing, what powers infowaves? Based on my research, my answer to that question is transdisciplinary resonance, both intuitive and reflective.

Brain trust discussion #3 - Infowaves

Conversation Pieces

Questions for shared discussion and storytelling around a shared boundary object or concept

The experience design concept of infowaves (curated and embodied) is intended to support social sustainability efforts, asking the questions:

What do you think makes an infowave different from information as commonly defined?

What does an infowave look like in your intersection?

What features does it have?

What is a sign of life infowave in your intersection?

How do we curate signs of life infowaves?

How do we embody signs of life infowaves?

What is a sustainable resource infowave in your intersection?

How do we curate sustainable resource infowaves - approaches, objects and concepts?

How do we embody sustainable resource infowaves - approaches, objects and concepts?

What is a social-ecological infowave in your intersection?

How do we curate social-ecological infowaves?

How do we curate life moments, movements and self-audience awareness?

How do we curate relatable information, balanced critique and holistic approaches?

How do we embody social-ecological infowaves?

How do we embody life moments, movements and self-audience awareness? (social consciousness)

How do we embody relatable information, balanced critique and holistic approaches? (quality of information consciousness)

How does understanding infowaves as information experiences change, grow or impact on your reflections on informed learning - ethical/creative use of information to create new knowledge - as a bridging concept?

Activity

Using insights from these discussion questions, write reflective stories or draw some diagrams to depict what your infowaves might look like, including how they could be curated or embodied.

Brain trust #4 - On resonance

In simple terms, when something is resonant it clearly connects because it is making you think of a familiar similar experience or memory. It is an easily relatable experience of information, perhaps because an audience is working in a similar field to you. In transdisciplinary resonance, the meaning of resonance goes beyond what is similar to you. Here, when something is resonant it is more about having reinterpretations of information transferred from different contexts and the ethical considerations of the impacts of these reinterpretations.

A reinterpretation, or seeing things in a new light, can give power to an infowave at its birth. It is when something—whether a project, person or object—has been heard, seen, digested, engaged with, interpreted and perhaps referenced and transformed with new and possibly deeper meanings generated in a different context from where it first creatively emerged.

Resonance emerges from the regular informal discussions around knowing, listening to and bridging gaps. People sharing their knowledge and work, particularly reflecting on and intuiting how it was or could have been interpreted in different

contexts, can help amplify its impact. Critical reflection allows us to construct rich metacognitive understandings.

Resonance can also appear in later stages of a project as the Silver Lined Cloud of Resonance, an intangible “entity” created within relationships. Wisdom in retrospect and hindsight is distinct from the interactions from which it emerged. Resonance in cultural shifts, can support regeneration or renewal in times of rebuilding through a global crisis. How will reinterpretations and wisdom shape the course of current and future regeneration efforts?

Transdisciplinary resonance is a way of co-designing experiences for people to interact with more relevant or meaningful informational waves. Social innovators are often working with knowledge collaboratively shared in multiple stakeholder relationships, as situated contexts. Two interactive, yet contradictory, experiences are important for co-producing resonance—on both personal and social levels: (1) Understanding yourself by engaging in reflection and intuition for personal and social resonance, and (2) Understanding people by sharing personal and social resonance through mutual mentoring, coaching and active listening.

For example, in the focus group for resonance a key discussion question might be: How do we listen for, intuit and reflect on various resonances of an intersectional project or infowave, particularly the resonances we did not anticipate. And when we have identified some of those resonances, how are they impacting on us and on the world?

A recent powerful example of a resonant infowave could be ‘A Symphonic Odyssey’ with physicist and acclaimed science communicator Professor Brian Cox, a unique exploration of the secrets of the universe and what it means to be human by unifying delightfully unexpected moments and perspectives from music and cosmology.

Brain trust discussion #4 - Resonance

Conversation Pieces

Questions for shared discussion and storytelling around a shared boundary object or concept

What is your specific boundary object / bridging concept for group discussion?

How do we listen for, intuit and reflect on various resonances of an intersectional project or infowave, particularly the resonances we did not anticipate?

When we have identified some of those resonances, how are they impacting us and on the world?

How do we reflect on reinterpretations?

How do we intuit reinterpretations?

How will the reinterpretations and wisdom shape the course of current and future regeneration efforts?

How do we reflect on personal and social resonance?

How do we intuit personal and social resonance?

How do we reflect on common and nuanced resonance?

How do we intuit common and nuanced resonance?

How do we learn informally for resonance?

How can understanding yourself lead to resonance?

(1) Understanding yourself by engaging in reflection and intuition for personal and social resonance.

How can understanding people lead to resonance?

(2) Understanding people by sharing personal and social resonance through mutual mentoring, coaching and active listening.

What are resonant information experiences?

How do we co-design resonant information experiences?

How does understanding transdisciplinary resonance as information experiences change, grow or impact on your reflections on informed learning - ethical/creative use of information to create new knowledge - as a bridging concept?

Activities

Introduce your ideas/work/research findings developed from one topic/area into one or two different contexts or fields that you think are relevant and might benefit from connecting with your work - either on social media discussion, or at multi-disciplinary conferences and meetings. Show empathy for the history and perspectives of this ‘new group’ before pitching yours, and take note of the range of reactions - both rational and intuitive.

Later reflect on how your ideas are perceived and interpreted by this new group from a new lens and how you might better integrate or connect. Try to sustain the connections and over time note any impacts/changes on knowledge generation, key people including yourself. Integrate these learnings and reflections back into your own area to transfer knowledge and regenerate this new insight.

Brain trust #5 - On resonant infowaves

The concept of resonant infowaves is a way of bringing together the elements of infowaves plus resonance equals shared understanding. It essentially involves 4Cs: Creativity, criticality, communication and collaboration.

Creativity and imagination for resonance

Creativity for infowaves is about enabling creative and imaginative capacity. Being able to transcend through the mind's eye, the immediate senses and the self—one's own culture and beliefs—and to know the gaps that need bridging. Relevant or relatable information across many perspectives can only be known through accidental discovery in the creative process, towards developing individual creative capacity. An example is boundary objects such as films as catalysts for shared infowaves as sustainable resources to inspire hope and solutions.

Critical thinking for resonance

Balanced critique is about developing critical thinking capacity through diverse critical perspectives and feedback. It is about being responsibly subversive through challenging yourself, challenging others, challenging the world. Balanced critique is

also about knowing the best ways to present or receive critique to remain conducive to transdisciplinary work and working relationships.

People learn how they can be relatable from listening to the feedback from another discipline or industry. In academia (and many other industries I am sure), there is a tendency for people to delineate their work from others, in an effort to stand out as unique in a sea of competition.

I have learned that a new field can suffer from some insecurity, and if you do not align with another's perspective, they can take it as a personal attack instead of critique to progress a concept forward. While this is understandable as a way of identity formation, it can be inadvertently divisive. "I am special as this, and everyone else is such and such". While it is healthy to promote one's interests, it is important that we discuss our work and critique others' work in a way that invites and encourages others to connect and collaborate on a shared problem or responsibility.

Communicating for resonance

Transdisciplinary resonance is a metaphysical concept that expands our often deeply personal capacities for communication and collaboration, by challenging the overly

simplistic “know your audience or client” and “connect with your audience or client” business communication mantra. Eventually, anyone who creates anything innovative comes to realize that their meaningful audience or client may be living in different worlds, other than the ones they imagined and originally intended to reach. In my transdisciplinary projects, resonance was an intangible “entity” created within relationships, distinct from the interactions from which it emerged. For me, the resonance in the form of a silver lined cloud was only barely recognizable a few years after the formal “completion” of the project. I could see people downloading, reading and digesting and interpreting my work for theirs, in a fascinating gamut of different ways to anything I had ever imagined.

Collaborating for resonance

In resonant cultures, there is much greater awareness and recognition of deeper learning experiences. All participants become conscious of differences in human perception and the potential for unintended impacts of their productions on global health or people-planet-technology relationships, mainly experiencing these through informal learning and reflection. Transdisciplinary resonance is ultimately about humanizing digital and social innovations and their trajectories. This includes the paradoxical practice of competitive collaboration

or “co-opetition” on local and global scales, for provoking and challenging informational wave generation towards social innovation.

In my postdoctoral research on how people experience information in social media, I found that maintaining an open-minded approach to consider all elements holistically with a broader audience in mind produces resonance. The grounded theory data collection and data analysis maintained an open-minded approach, so that non-information-specific elements and issues could be gathered and considered holistically.

A reviewer’s comment presented a unique opportunity to revise with a much broader non-information audience in mind. For example, the work was very relevant to public media discourse on disinformation and echo chambers that people experienced balanced critical perspectives in social media as informing social change.

Data analysis brings to the forefront new information experiences and cultural orientations for collaboratively developing transdisciplinary cultures and designing complex adaptive systems. Transdisciplinary resonance is simultaneously an information experience and a cultural orientation, which prioritizes making connections that transcend disciplinary, sectoral or public boundaries.

Another concept relevant to co-designing resonant information experiences is that of “high quality connections”, which refers to ties characterized by mutuality, positive regard and vitality. It would be wise for social change agents producing transdisciplinary projects for impactful social change, to ensure that their information and knowledge resources are imbued with the qualities of resonance, infowaves, balanced critique and open-minded, holistic approaches. Specific interactive experiences such as encountering, sharing and maintaining openness around information are also important for social change agents to design, build and integrate into their transdisciplinary workflows within complex adaptive systems.

Brain trust discussion #5 - Resonant Infowaves

Conversation Pieces

Questions for shared discussion and storytelling around a shared boundary object or concept

What is your specific boundary object / bridging concept for group discussion?

How does your infowave enable creative and imaginative capacity?

How does your infowave enable critical thinking?

How does your infowave enable communication?

How does your infowave enable collaboration?

Which third spaces would your intersection touch on? (For examples of third spaces, please see the following section Future Considerations: How does shared understanding expand awareness of third spaces in your intersection work?)

Activities

Based on your answers and insights gathered from these questions, write reflective stories or draw diagrams/artwork to depict your resonant infowaves in third spaces.

Future considerations

Knowing and bridging gaps (or unknowns) is foundational to the shared understanding paradigm. It is suggested that we dedicate time to build our networks (brain trusts) by collectively reflecting, questioning and discussing around these concepts.

Whether you are working in educational, environmental, health or business spaces, we have found it useful to facilitate ongoing informal conversations in shared understanding focus groups and networks with questions adapted for your issues to incubate and nurture each element in the diagram.

After each meeting, we capture key learning moments, paradoxes and dialogue maps through various multimedia. We also consider the following questions:

How does shared understanding expand meaningfulness to your intersection work?

Meaningfulness refers to facilitating transdisciplinary research and projects to meaningfully impact upon all stakeholders involved, and to make a substantial—as opposed to an appeared perceived—difference both now and in the future. It

is about being self-motivated to produce work that is sustainable, fulfilling and makes a difference to society.

How does shared understanding expand awareness of third spaces in your intersection work?

These elements of shared understanding are often generated or enabled within ‘third spaces’ at the intersections between diverse cultures. Third spaces, either physical, digital or internal are liminal in-between spaces where new cultural identities are formed, reformed, and constantly in a state of becoming. Usually third spaces are casual, informal spaces of community gatherings places such as cafes, boutiques, libraries, maker spaces, museums, town halls, national parks. Increasingly, these spaces can also be digital live-streamed platforms that increase the capacity of societies to formulate a problem, bring it to the fore of public arenas and engage a variety of stakeholders to jointly frame or reframe towards solving this problem.

What are some implications of implementing the shared understanding model for responsible innovation education and training?

The model can be used in education and training contexts for responsible innovation considering the effects and potential impacts of science and technology innovation on the

environment and society. When we say smart tech or artificial intelligence often what is missing is the smart and intelligence. This is a model that seeks to foster digital social innovations informed by more meaningful moments, ethical intelligence and wisdom. Everything we share, produce and consume has repercussions. Infowaves transmitted and received are self aware and aware of others.

How does the shared understanding model contribute to awareness expansion in your intersection?

Awareness is informed by people processing their histories, traumas, neurodiversities, emotions, research - an infowave is broadly aware, curated and embodied with elements of infowaves in order to be more ethical and humane, to regenerate from information pollution.

How can we take this disinformation pollution and regenerate it into informed truths and something more peaceful and humane?

How does the shared understanding model contribute to collaborative information experience design and evidence-based practice?

Collaborative information experience design concepts such as resonant infowaves and shared understanding involves

increasing opportunities, personal agency and empowerment for richer learning experiences through paying close attention to what informs deep learning.

To enable slow solutions, deep thinking and informed learning cultures we may need to prioritize nurturing more creative, reflective and intuitive research, evidence-based practice and innovation cultures in diverse third spaces.

About the Author

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Faye has a long-held personal interest in understanding the role of knowledge in social-ecological systems. After experiencing and surviving a series of geological disasters in her youth, she began writing nonfiction and fiction about the importance of human relations and socio-cultural dimensions of sustainability.

During her Ph.D at Queensland University of Technology completed in 2014, she developed a transdisciplinary knowledge ecosystems model for research innovation. Dr. Miller's peer-reviewed research books, journal articles, media pieces and creative works, have impacted across areas such as higher education, information science, knowledge management, software engineering, internet communication,

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Dr. Miller is Founder and Principal Consultant at Human Constellation, Research and Career Development Consulting. She has led and partnered on projects with multiple universities and organizations including Reddit, Twitter, CSIRO, Swiss Academy of Arts and Sciences, International Documentary Association, the Australian National University and Harvard University. Her latest scholarly books are Producing Shared Understanding for Digital and Social Innovation (publisher Palgrave Macmillan UK, 2020), and its companion guide The Shared Understanding Playbook (HC Publishing, 2024). She has been an invited contributor to two forthcoming major publications The Encyclopedia of Inter- and Transdisciplinarity (Edward Elgar Publishing, UK) and The Information Literacy Handbook (Facet, UK), providing new chapters defining shared understanding. She also wrote and produced the documentary film Imaginative Storytelling Experiences filmed in Epping Forest, London (2016). She recently wrote book reviews for shepherd.com. She is currently developing a social science fiction novel and film project about relations between humans, animals and artificial intelligence in climate futures. She writes the blog newsletter The Retrofuturist. For inquiries email: faye(at)humanconstellation.org