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Re-Creating Higher Education Pedagogy by Making Materiality and Spatiality Matter

ABSTRACT

This study marks a resting point within ongoing explorations of creativity, transdisciplinarity, materiality, and spatiality in Higher Education (HE) pedagogy. It interrogates how different materialities and spatialities shape learning to re-create practices to better respond to societal challenges. This is situated within an imperative to move away from Western-dominated approaches to pedagogy and research, where “Western” is characterized as onto-epistemological rather than place-based. The study draws on postqualitative enquiry into two creative, transdisciplinary HE courses, which entwined the arts, sciences, and entrepreneurship to facilitate responses to societal problems. Framed using posthumanizing creativity, the research aims to decenter the human and posit creativity as a dialogic, intra-active process with the capacity to change education from within. A postqualitative approach works through three data diffractions. The first two involve glow moments used for collaging, cut through with theory. The third diffraction involves glow moments from which a short dance film was created. The study aims to stir readers/engagers to action their creativity as feeding forward into their own work in HE pedagogies, to consider how to move beyond the word, and the influences all of this can have on reimagining practices and changing structures.

Keywords: creativity, transdisciplinarity, HE pedagogy, materiality/spatiality, beyond Western onto-epistemologies.

This study marks a resting point within our ongoing explorations of creativity, transdisciplinarity, and materiality/spatiality in Higher Education (HE) pedagogy. Our team is embedded within Higher Education Institutions (HEIs) and education organizations across Europe, and is engaged in investigating the intersections between these four elements in a bid to challenge the Western neoliberalization of HE (Harvey, 2007; Kinchin, 2020), and its emphasis on speed, marketization, competition, and individualism (Ball, 2003). Instead, our work centers qualities such as ethicality, social justice, and care for our common future within HE pedagogy, through an emphasis on changing HEI practices so that they can better facilitate staff and students to respond to societal challenges (Chappell, 2018; Chappell, Natanel, & Wren, 2021; Ulmer, 2017). This is situated within a long-term imperative to move away from Western-dominated approaches to pedagogy and research, born out of a threefold dissatisfaction with Western epistemologies’ denial of embodiment, the other-than-human, and Indigenous knowledges and practices. Following Mehta and Henriksen (2021), we see “Western” characterized in this way as an onto-epistemology rather than a place. In so doing, our work steps away from traditional quantitative, qualitative, and mixed-methods creativity in education research into the realms of posthumanism, new materialism, and the postqualitative. We therefore offer insights into new frames and practices for doing creativity in HE research to respond to this threefold dissatisfaction by asking very different questions, producing hybrid and innovative methodologies, and provoking different answers (Taylor, 2019). This literally involves creating new language to express these practices and ideas; readers new to this arena may find the recent *Posthuman Glossary* helpful for navigating this new critical terminology (Braidotti & Hlavajova, 2018).

MOVING CREATIVITY IN EDUCATION RESEARCH INTO NEW REALMS

As a thought-leader in these realms, Braidotti (2019) eloquently exposes the damage done when a Western onto-epistemological approach manifests in the neoliberalization of HE via Western-style “cognitive capitalism” (Moulier-Boutang, 2012). This prioritizes rational minds over entwined mind-bodies (Fullagar, 2021), makes the other-than-human subservient to human needs, and fails to offer equal space for the multiple ways of knowing and becoming human (Vergès, 2019). The individualized, human-centric epistemological approaches that Braidotti critiques are fundamental to academic traditions including those which have a strong presence in creativity in education research to date; this therefore raises fundamental questions about the foundations of creativity in education research and how we might do things differently. Braidotti goes on to argue that the disembodiment, financialization, and disenfranchisement, which ensues from cognitive capitalism rests on technological mediation, which in turn is supported by labor exploitation and overt commercialization of institutions, including those within HE. At its worst, Braidotti argues this erodes public support for democracy, and democracy itself by centering commercial principles rather than integrity within education. Contextualized within the environmental devastation that now surrounds us all and our combined affective exhaustion and anger, Braidotti asks how we should and can respond. She notes a willingness to change from within HE and provides detailed insight into what she calls “transdisciplinary exuberance,” tracking the emergence of new disciplinary boundary breaking “studies.” She sees these as a “counter project” to the dominant Western narrative, which engages beyond the human, and therefore beyond neoliberal academic confines, to generate collective praxis, and do so in a compassionate and transformative manner. We argue that these approaches, in which we are engaged, provide hope that HE can move beyond Western cognitive capitalism to offer a more just and effective arena in which we can creatively tackle the rapidly accumulating challenges of the 21st century.

THE POSTHUMAN TURN

These arguments are part of a wider posthuman turn, which involves reimagining HE pedagogy, practice, and research (Taylor & Bayley, 2019), and reconceptualizing what matters creatively and relationally (Gravett, Taylor, & Fairchild, 2021). In combination, posthuman authors are challenging the failures of humanist and cognitive accounts to acknowledge how environments, places, spaces, and objects influence learning, and the quality of change and response that can come from their inclusion in pedagogy.

Taylor and Bayley (2019) rhizomatically muses on the multiplicity of ways in which HE pedagogy, practice, and research can be done differently to current Western narratives. She emphasizes that this involves vulnerability, passion, risk, mess, and difficulty; colleagues engaging in these realms for the first time through this special issue should be assured that “not knowing,” difficulty, and sometimes confusion are often part of the early and ongoing engagement with these approaches. To all of this, our authoring team would add irrepensible perseverance to maintain progress. Taylor calls her readers to help generate a more capacious HE, and the SciCulture project at the heart of this study responds to that call. In so doing, our team are working to respond to the ecological catastrophe that is the Anthropocene (O’Neill et al., 2020), which generates not only planetary injustices, but intensifies human–human social injustices, especially in terms of education and educational access (Bozalek, Braidotti, Shefer, & Zimbylas, 2018).

This work is not without its problems. Focusing in on the issue of human–human social injustices, Todd (2016) warns those working with posthuman and new materialist approaches that if applied in isolation, they are just another form of colonization. Taylor (2020) is alert to these critiques from Black, antiracist, and Indigenous scholars for their perpetuation of the White episteme and Eurocentric academic practices. Taylor advises White scholars to engage with the discomfort and think with humility in response. Our writing team for this study is White and multiracial, and as we move our ideas forward, we aim to acknowledge the Indigenous ideas which in places have pre-empted the turn toward materiality and de-centering of the human. We are humbled by our inclusion in this special issue alongside our Indigenous colleagues and see it as a long-term endeavor to better understand how to recognize, create space for and work with their long-held expertise. We hope to work with them to gain the best from posthuman, new materialist, decolonizing, and Indigenous onto-epistemologies so that we can combine approaches to move beyond Western approaches to pedagogy and research.

POSTHUMANIZING CREATIVITY

In this study in particular, we are building on previous work (Chappell et al., 2021), which aimed to re-design HE pedagogy by attending to the materiality, embodiment, affect, social justice, and political

transformation that becomes possible through de-centering the human and taking a posthuman approach to creativity. Our purpose here is to contribute to educating students in how to practice transdisciplinarity and creativity, working through spatiality/materiality beyond the human to better respond to anthropocentric challenges.

Central to this, our team has been particularly active in conceptualizing the idea of posthumanizing creativity (Chappell, 2018; Chappell et al., 2019), alongside other posthuman and new materialist scholars (e.g. Burnard, 2023, in production; Harris, 2021; Cook, Major, Warwick, & Vrikki, 2020). Our concept is rooted in Craft's (2011) original arguments for creativity as key both to empowering learners to ethically enact their own new ideas, but also as a means to use these new ideas to change education from within, in this case HE. The authoring team have themselves shifted from a humanist-driven conceptualization of creativity (wise humanizing creativity), to a posthumanly influenced understanding. Chappell (2018) documents this journey, which may offer helpful insight for readers starting out toward making this shift. Posthumanizing creativity argues that new ideas are generated through materially embodied dialogic interactions between many different kinds of "voices" (Bakhtin, Holquist, & Emerson, 1986) including those of other-than-humans (Braidotti, 2013). As a result, new phenomena emerge through agential intra-actions between humans and these other-than-humans (Barad, 2007) with subjectivities generated through the very process of intra-action. Although stepping away from Craft's humanistic theoretical base, this new theorization maintains the arguments for creativity as generating learners' ideas and change, while extending the reach of this change through the inclusion of other-than-humans.

When creativity is considered as a change agent in this way, it is worth exploring what kind of change is implied. With posthumanizing creativity inherently involving an ethico-onto-epistemology, that is, researchers are entangled with the phenomena being explored and the methodologies used, change is entwined across both methodological and pedagogical process. Bodén, Ceder, and Sauzet (2021) remind us that this kind of change is not something "out there" to be found, or a future to be envisioned in a linear progression, but is an emergent phenomena that enfolds through its exploration. Similarly, Amsler and Facer's (2017, p.1) positioning of educational futures is influential here as they forefront the role of critical anticipation which "assumes an active and critically reflective interaction with futures that are unknowable." In positing that posthumanizing creativity has the potential to lead to change from within HE, we are referring to change that emerges and that allows for multiple possibilities without closing down or colonizing the future. This process is also grounded in doing ethics differently. Returning to the decentering of the human, new codes of educational ethics might emerge through activist and creative processes whose moral structures are not solely driven by human concerns/values (MacCormack, 2012). The futures that emerge explicitly through posthumanizing creativity should therefore have the potential for new personal, social, environmental, and political possibilities, shaped by ethical imperatives beyond the human, which have the capacity to contribute to Braidotti's (2019) counter project detailed above. While we acknowledge our imperfect attempts to gradually incorporate decolonizing and anti-racist theorizing and practice into our own work, we hope ultimately that the futures that do emerge contain possibilities for what Sundberg (2013) refers to as multi-epistemic literacies (i.e. dialogues between diverse epistemic perspectives – whether embodied, Indigenous, or posthuman – to enact pluriversal understanding).

TRANSDISCIPLINARITY IN ACTION

As part of this, within our explorations of pedagogy, and in line with Braidotti (2019) and Quinn (2021), we are keen to explore transdisciplinarity (e.g. Chappell et al., 2019), with an aim to address problems which stretch across traditional Western disciplinary boundaries. This notion of boundary crossing problem-solving resonates with Benatar's (2000, p.171) definition of transdisciplinarity, as "an integrated approach to complex problems using the methodology and insights from a range of disciplines with differing perspectives on the problem under consideration." More recently, we have found Kassam's (2021) ideas about transdisciplinarity influential as they encourage us to generate insights through academic enquiry working with communities of social practice, especially those found in Indigenous knowledge communities. Benatar and Kassam's perspectives in combination provide a good grounding for our SciCulture work, which aims to respect learning across academic and community practices, and fuel change at the intersection.

In developing posthumanizing creativity and transdisciplinarity in HE, we have generated calls to re-design HE to center qualities such as ethicality, social justice and care for our common future (Chappell et al., 2021). This has involved the experimental design and delivery of a set of these alternative SciCulture HE courses intended to provide space outside of marketized curricula. These SciCulture courses are shaped

using the staff team's expert understanding of design thinking and creative pedagogies, with the intention of facilitating participants to respond in transdisciplinary groups to wicked problems (Khoo, 2017). This allows for creative staff experimentation and participant risk-taking, all researched cyclically to embed learning from one course into the next. This is ultimately with the intention of being able to embed an emergent credit-bearing SciCulture course or module into host HEIs. This paper builds on Chappell et al. (2021), which explored the first two courses, and uses the same methodology to interrogate the third and fourth courses, this time with the intent to contribute to re-creating HE pedagogy through attention to materiality and spatiality.

Across a four-year period (extended due to COVID-19 restrictions), the SciCulture program ran four 1-week immersive intensives taught by HEI staff and attended by HEI students and staff from across the sciences, arts, and business, from across Europe. All courses offered the opportunity for participants to respond to a wicked problem in transdisciplinary teams. Chappell's theorizations of creativity (Chappell, 2018; Chappell et al., 2019) and creative pedagogy (Chappell, Ruck-Keene, Slade, & Cukurova, 2016) were integrated with Van der Sanden and Wehrmann (2021)'s take on design thinking, with an increasing focus on posthumanism shaping the four courses as they developed, including in relation to design thinking (Forlano, 2017). The program has an overarching emphasis on activism and social justice with the intention of making change happen through alumni being supported to develop their own versions of the courses to provoke change themselves (see Figure 1 for an example course program). Of the four courses, the first two ran face to face, the third was entirely online due to COVID-19 restrictions, and the fourth was hybrid, with staff and students contributing either online or face to face. The first two courses focused on the problem of the Future of Education, and the last two on the Wellbeing of Cities.

Chappell et al. (2021) offers multiple ways to engage with how materiality and spatiality mattered within the first two experimental courses, and how they shaped and created subjectivities and learning. Through

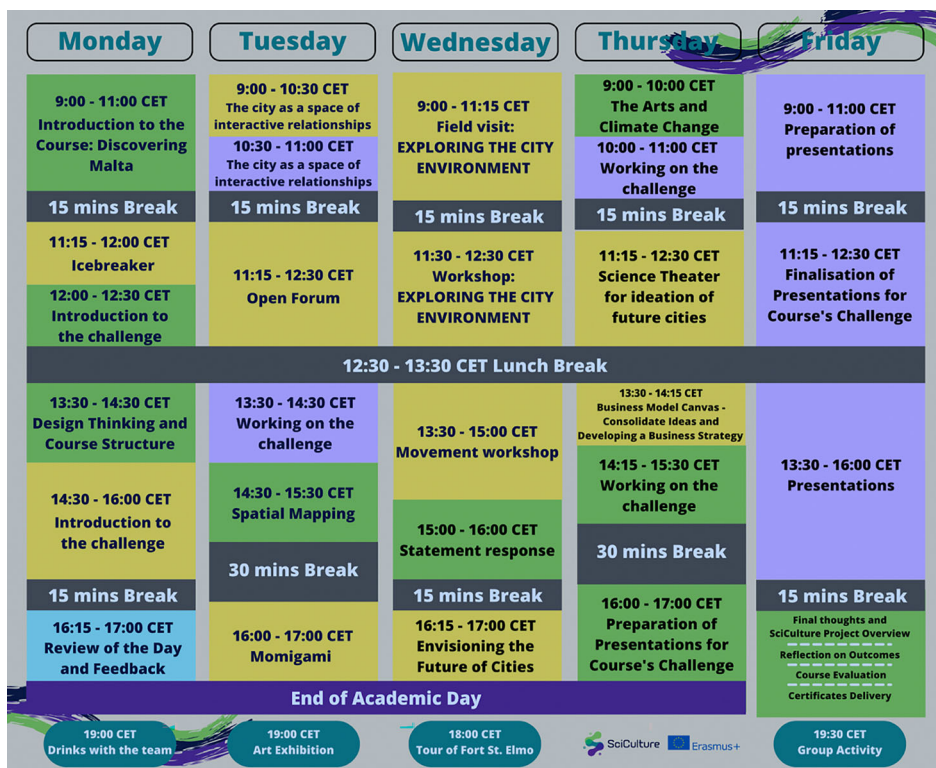


FIGURE 1. Example course program.

images, words, film clips, and digital software, she articulates how pedagogy developed to pro-actively use understanding of body-worlding (Manning, 2013), spatial atmospheres (Hunter, 2021), and storying potentials (Massey, 2005). She leaves provocative threads available to those engaging in the article including: how to complement “hands-on” and digital posthumanizing pedagogical and methodological practices; how to more fully engage with ethical responsibility, provoked by Shaw’s encouragement to work with careful repurposing and playful reconfigurings of spaces to decolonize through subversion and activism; to find new ways to incorporate embodiment within academic writing about HE pedagogy; as well as to hear and respond to calls for posthumanism to better connect to decolonization and countering racism.

This study picks up on these explorations into materiality and spatiality within the last two SciCulture intensives. In response to intra-actions within those courses, it pulls through some of the above threads, alongside exploring new ones.

DOINGS

When engaging in postqualitative research, there is simply no choice but to do empirical research differently. Postqualitative research is rooted in an enmeshed understanding of ethico-onto-epistemology. The researcher is not and cannot be positioned as an objective authority, but is entangled within the research alongside “others” including environments, objects, other living beings, and technologies. St Pierre argues that postqualitative inquiry is not about following a guide or set of instructions in order to achieve rigor (St Pierre, 2013), and it must be invented and created differently every time.

Chappell et al. (2021) advocates carrying out postqualitative research through the combination of four theorists’ approaches in order to achieve its full potential. She applies Ulmer’s (2017) idea of practicing equivalence and experimentation in order to encourage space for other-than-humans to engage and intra-act within the research and to experimentally take thinking and practices in new directions. She applies Taylor’s (2017) argument for recasting new ways of knowing and researching especially to respond to critiques of Western approaches mentioned in the introduction to this article which fail to incorporate embodied and material ways of becoming. Chappell adheres to Barad’s (2007) call to do ethics differently through responsibility, meaning that researchers are not working with a humanly driven moral code, but are alert to how the inclusion of “others” brings different ethical imperatives into the mix. And finally, Chappell argues for remaining alert to Haraway’s (2008) call to keep troubling questions and options with curious care; this especially relates to continually working to decenter the human but equally to ensuring that when humanity is considered it is not a dominant Western stereotype, thus working to allow more space for Indigenous knowledge and practices which already understand many of these practices.

During this research into the last two SciCulture intensives, the research team were attending to constant troublings from the COVID-19 pandemic, subsequent lockdowns, changes in working practices, and life issues. The third project intensive was pushed entirely online with everyone connected through the online platform Teams. The fourth project was ultimately re-shaped into a more 50/50 hybrid experience in the week prior to the course because of new Covid restrictions. This led to lively, and at times anxious explorations of the project, its learnings and emerging subjectivities, and their relationships with materialities and spatialities characterized through these digital and hybrid intensifications. We drew on new materialist and post-humanist relationalities to make visible processes, relationships, and movements to understand our situations and to inform future course development with the following foci: considering how different materialities and spatialities matter within innovative Higher Education practice and how they might shape and create responses, subjectivities, and learning for all involved.

We sought to do data differently to generate “emergent workings out of affective, material and spatial happenings” (Taylor, 2016, p. 21), to recast our ways of researching (Taylor, 2017). This study seeks to be playful with data in an “action-oriented process” that is a “multi layered, multiplayer event” (Myers, 2017, p. 186). In thinking data anew, we draw on the doing-data and data-doing work of Casey Myers and her classroom-based inquiry with young children (Myers, 2017). Our data practices are rooted in collaborative thinking and amplify the presence of more-than-human and human players within the week-long digital and hybrid engagements. Applying Ulmer’s calls for practicing equivalence and experimentation, our work on SciCulture’s third course features processes of data-making through speculative paper and digital collage entanglements using photovoice data, facilitator workshoping, and by cutting theory through data. Explorations for the last SciCulture course saw us respond to Chappell’s (2021) call to bring embodied and experiential processes into academic publications. This was in order to honor these ways of being in their own right without translating them into words, through the inclusion of a short experimental dance film. These

are data practices that center curiosity, openness, and playfulness with the potential to activate new orientations (Myers, 2017).

Our ethical thinking has emerged from ethico-onto-epistemological enactments of practices intertwining ethics, knowing, and being. This ethical work is described in detail in Chappell (2018). It is grounded in Haraway's (2008) concepts of curious care and respons-ability. In enacting a different kind of ethics, we highlight and celebrate the mattering of materiality and spatiality. All participants – researchers and student participants – are situated as dwelling within the course experience entangling as part of dynamic, intra-active, emergent, material-discursive SciCulture spaces. A performative ethics is enacted that acknowledges relational, processual, embodied, and contextualized threads. Multiple “lively relationalities” (Dolphijn & van der Tuin, 2012, p. 96) emerged as SciCulture became a creative space where “all kinds of unlikely things can knock up against each other in all kinds of ways” (Amin, Massey, & Thrift, 2003, p. 6). Ethical spaces are created for ongoing conversations and actions in the moment recognizing “the co-constitutive and mutually implicated nature of ethics” (Kuby, Spector, & Thiel, 2019, p. 13). This is demanding work, which requires constant vigilance and care.

THIRD COURSE

Data as doings – data as photovoice

“Photovoice” data were collected from participants who shared photographs of significant moments, artifacts, and materials from the courses, with added reflective captioning (written or recorded). Playing with these data created embodied material affective entanglements with the sensate dynamics of the SciCulture digital learning spaces (Lenz Taguchi, 2010), as well as with participants' physical environments. Images were reoriented as affective “potentials” with the power to open up and provoke (Coffey, 2020). Becoming attentive to data's invitations, we spent time with images and words, looking for data that “glowed” (MacLure, 2010). Multiple threads emerged including embodiment, movement, materials, place, space, masks, freedom, escape, collaboration, uncertainty, and invention. And so, we ask: what kinds of relations and responses can we cultivate with glowing data threads?

Doings as data – facilitator workshop

Research-creation spaces were generated through online workshops for eight SciCulture facilitators interested in further developing ideas of materiality and spatiality. In three workshops, facilitators engaged in playful, collective experimentations diffractively threading and enfolding multiple voices, photovoice doings, doodling, Momigami, and a “walking-with transdisciplinary” activity (Barad, 2012, p. 1).

To materialize our thinking, we adopted Adams and Thompson's (2016) methodology of “following” through: gathering anecdotes, following the actors, listening for the invitational quality of things, and studying breakdowns and accidents (Thompson & Adams, 2013, pp. 354–355). Workshop matterings are illustrated in Figure 2.

Workshops became spaces where agential assemblages began to create ongoing data projects; our thinking shifted from asking what we can learn about the SciCulture course to consider what the SciCulture event invites us to do next?

Data-makings – collages

A cacophony of data emerged from the workshops: found texts and images/videos, scribbles, theory, voices, questions, and ideas. Data-making practices involved arranging, rearranging, and layering fragments to create two data collages (Springay, Irwin, & Kind, 2005).

Exploding Boxes was an electronic collage of voices, video snippets, and excerpts from the workshops. The explosion was a response to the feeling of tension in the data where partners felt confined within digital spaces. *Adobe After Effects* was chosen to create the explosion to demonstrate that the digital was encroaching on and penetrating our flesh, infecting all aspects of lifeworlds, and manifesting questions about our relationship to the other-than-human world. Images and sounds were overlapped with each other to create vibrant boundaries which shifted, changed, and reappeared as something new (Chappell et al., 2019). The second collage was a 3D “deep map” called *Entangling Tales* constructed of paper, glue string, paperclips, photographs, and theory to intra-act with – to lift, to fold, to twist, to open, to bounce ideas in intra-action with those engaging with it.

Following Barad (2007) and Mazzei (2014), our team then chose to cut theory that resonated through the collages, and allow emergent trajectories, threads, and intersections to grow from this process. The

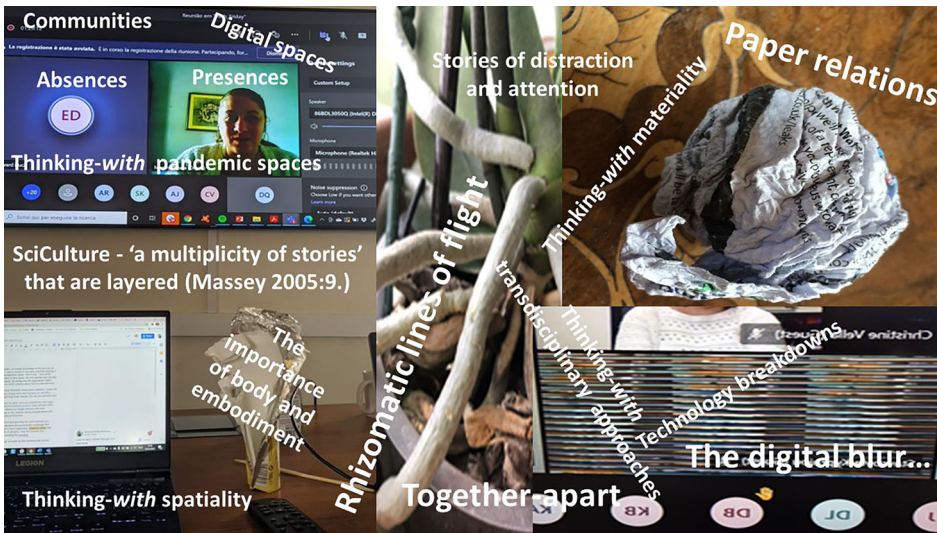


FIGURE 2. The kinds of issues covered in the workshops.

theoretical piece chosen for cutting through *Exploding Boxes* was Pirbhai-Illich and Martin (2019) *A relational approach to decolonizing education: working with the concepts of space, place, and boundaries*. For *Entangling Tales*, the theory used was Ingold's (2008) *Bindings against boundaries: entanglements of life in an open world*, *The textility of making* (2010) and *Making – Anthropology, Archaeology, Art and Architecture* (2013). The outcomes of these cuts are detailed in the *New Threads and Old* section.

FOURTH COURSE

Explorations into the last SciCulture course continued through Barad's notion of respons-ability (2007). We decided to return back to the course participants, to make sure that different elements have the "ability to respond," whether human or other-than-human, and to see how they might raise up data for further inquiry. We returned to the human participants through WhatsApp, asking them what was their standout learning moment on the SciCulture course. Among a number of responses, this one "glowed": "The whole process of creating a project with my group was a learning process, but a standout – it would be the final presentation when we observed and listen to the other projects." This quote and a deeper interrogation of one particular final day participants' sharing then became the starting point for a movement-based film. We chose to use movement and film in combination because together they are able to forefront elements of the final day sharings that were particularly available to participants through observation and sensation. This is a response to Chappell et al. (2021) and others (e.g. Hickey-Moody, Palmer, & Sayers, 2016; Ivinson & Renold, 2020), who have argued that there is an over-reliance on the word in peer-reviewed academic articles, especially where research interrogates embodied, material, and spatial processes that do not have equivalence in words, but are ways of knowing in their own right. The film therefore aims to forefront moving human bodies, materialities and spatialities edited, cut together and captured in intra-action with those of other-than-humans. As Fullagar (2021), p. 4) argue "moving bodies are generative of creative possibilities for knowing otherwise"; and so we include them in the film to offer insight into desire, power, affect, intent, and relationships, among other elements of data, that participants might have accessed through observation and sensation during the sharing. As a member of the article authoring team, and as an experienced dance artist, Chappell led on developing the film. She worked with Leonie Hampton (visual artist), Martin Hampton (film editor), Pam Woods, and Lizzie Swinford (experienced dance artists), together entwining theoretical, methodological, conceptual, and epistemological insights and experiences with humans and other-than-humans, seeking to offer new insights into human-material engagements beyond that available through words.

While the film brings elements like desire and power into the peer-reviewed format, we are also very aware that it adds a further “layer” to the embodied, material, and spatial elements, which is different to the readership experiencing live performance art. We acknowledge that the lens, light, frame, and other camera apparatus especially intra-acting with the film-maker’s and editor’s gaze and dance artists’ choreographic decisions, contribute to the layering of how readers/engagers view and intra-act with the movement, spatial, and material elements of our research (Adams & Thompson, 2016). We see this as a necessary, complementary, and indeed welcome, part of giving the reader/engager access in a scalable publishing format.

Having explained the methodology, the next section takes us into the collaging and cuts associated with the third course and then the film developed from the fourth course. While this looks very different to traditional creativity in higher education research with threads emerging in response to the above detailed practices, it should be noted that is not an “anything goes” process. Taylor (2017) reminds us that while this is uncomfortable, quality can be judged in terms of how well the research: de-centers the human; recasts epistemology; engages with materialist, relational, co-constitutive, affective, vitalist, and corporeal notions of experience; re-centers a focus on practices as material-discursive enactments; and inventively undoes the presumption of objectivity.

NEW THREADS AND OLD THIRD COURSE

The two collages contribute to the ongoing developments of the SciCulture courses and were featured in the SciCulture art exhibition which accompanied the last course in Malta, in 2021. Through these sharings and the cuts below, it is intended that both collages would/will have multiple and unanticipated impacts.

Exploding boxes collage cut

From researching the previous two SciCulture courses (Chappell, 2021), understandings emerged of spatiality and materiality defined by embodiment, presence, and the import of physical space to generate a felt and tactile way into storying and atmospheres as a means to transdisciplinary learning. This drew out pedagogical elements, which are rarely interrogated. How then could the SciCulture team and participants move from there to a third (Covid-lockdown initiated) course conducted entirely online through Teams software? The paradox was that we were required to work with our fresh understandings of embodied dialogue, ethics, and immersion in a digitized, differently materializing, non-tactile space.

The *Exploding Boxes* animation makes clear how this interruption in pedagogic and learning development felt to the staff and participants, and how the desire to break out of Teams’ boxed and “boxing” format was potently powerful. You can access the animation here: <https://youtu.be/4Mua-NnAUy8>. In searching for theory that would catalyze these feelings into pedagogic learning, Piribhai-Illich and Martin’s (2019) writing struck a strong cord. This was purposefully chosen by us to not only provide appropriate theory to cut through our data, but because their work is part of the decolonizing and Indigenous research from which non-Indigenous colleagues can learn how to better engage with multi-epistemic literacies (Sundberg, 2013). They discuss how working with space, place, and boundaries through a relational approach is a possible means to decolonizing education. While our attention has not focused directly upon trying to decolonize (to rethink education by deconstructing the European-centered colonial framework in order for other ways of knowing, such as those of the Global South/Global Majority, to thrive); our work does attend to how we can relationally rethink education to intersect multiple ways of knowing to respond to anthropocentric challenges. It is for this reason that Piribhai-Illich and Martin’s work resonates and that we seek to cut it through our data, in order to catalyze our thinking by learning with/through theirs.

Having striven so hard to forefront embodiment, presence, and tactility, forcing the SciCulture course into Teams, felt like a digital takeover of our practices. We purposefully do not use Piribhai-Illich and Martin’s colonizing/decolonizing terminology as this would be to appropriate a term specific to their process of dismantling a much more historically embedded framework. However, in cutting their ideas through our data, we hope to show how we have both learned more about our pedagogy and opened the door onto a consideration of decolonization within the SciCulture program itself.

They state that: “when the concepts of binary, categorical, property-bound thinking are applied to education we can see the coloniality of the classroom ‘box’...the space for learning is therefore bounded and closed” (p. 7). This sensation of being bounded and closed absolutely echoed how the third course felt compared to the previous two, and hence the production of an animation that begins with faces, words, images boxed uniformly on screen, taken over, and defined by the digital, as in Figure 3.



FIGURE 3. Animation of boxed words, images, and faces.

And yet, as we read on in Piribhai-Illich and Martin's (2019) writing they argue that (p. 8):

Even within a bounded space it is possible for teachers to create a sense of openness through developing ways of working in which students feel they can participate and that their knowledges and ways of being are invited into the classroom and taken up in the teaching

This is echoed in how the animation explodes the boxes into tiny fragments, leaving a space, admittedly a black one, but a space nonetheless in which there are no boxes, and no boundedness or closure. Using McGregor (2004), Piribhai-Illich and Martin argue that place can be conceived of as hybrid, provisional, and porous, and that power can be thought of as power with rather than power over. For us in digitized SciCulture, we were finding small but influential ways to make the place of learning provisional and porous. We did this by continuing to emphasize embodied collaborative movement work that foregrounded personal, cultural, and prior experience, solo tactile activities such as Momigami that could still be fulfilled as a shared parallel Teams experience, which centered sensation, immersion and presence in the moment, and even a shared evening meal which encouraged staff and participants to eat together online, discuss their meals, and see what they learned about each other.

In SciCulture's spirit of allowing participant sharings to emerge on the last day without a prescribed format or content, the participants' choices drew through these elements and not only kept them alive, but grew them too. For example, one group worked with notions of relational moving, communality, listening to their own and others' histories, keeping the "old in the new," and foregrounding ideas of traces and imprinting.

Relational moving provided a rich opening to their Teams sharing. Figure 4 shows their hands reflecting first the disconnection, soullessness, and isolation that the narrator in the recording is describing in current cities, and then, Figure 5 shows the interconnections to which their sharing aspired. The narrator tells us that this will work

... through arts and science, respecting our history, keeping the soul of our city... social interactions, family connections and play... how can we be embodied innovatively to balance our souls' cities?... that will make our souls connect with others, with ourselves, our cities?

They argue that cities have become soulless, with people stuck in information bubbles, with diversity forgotten. They foregrounded a desire for greater communality, arguing that we need to listen to our own and

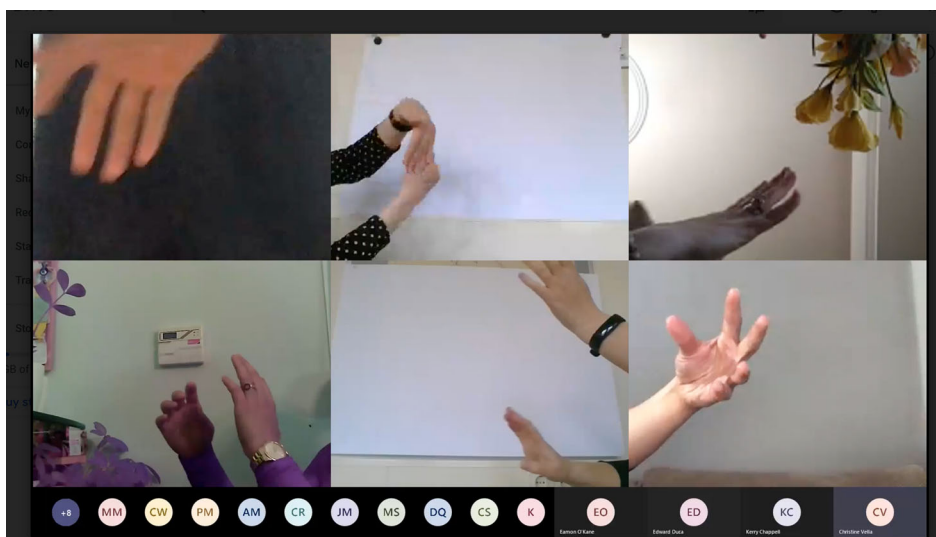


FIGURE 4. Hands reflecting disconnection, soullessness, and isolation.



FIGURE 5. The interconnections that they are aspiring to in their sharing.

others' histories, and to see the diversity of the city's residents, to experience and explore true conversations and accidental interactions to facilitate the city's communities, and to create spaces for debate so that residents can understand themselves and others (people and environment) better, predominantly through art. In order to refocus on the potential of attending to human-material intra-actions, they finish, in true post-human spirit, by sharing the art of Daan Roosegaarde, *Presence* (https://www.youtube.com/watch?v=fVifpW3o_M). This reminds us of the imprints, traces, and impressions that we leave on the world around us, and vice versa, as he describes it "it's immersive and you're one with the landscape" (Roosegaarde, 2019, 2 minutes 10 seconds).

So, while the staff team had been extremely concerned as to the boxing in of felt, spatial and live material elements of pedagogy, the *Exploding Boxes* animation reflects the pushing back against this (resonating with Pirbhai-Illich & Martin, 2019), with the participants taking ownership of the ensuing black space to work in a relatively unbounded, porous, and open way. We see here how digital materialities and spatialities which had, at first, felt completely constricting, were navigated by staff and participants to share, to some extent unique felt, embodied, immersive, and relational experiences. However, this is “to some extent.” The digital materiality makes it impossible for the hands in Figures 4 and 5 to ever actually touch, to engage through the sensation of skin on skin; it is impossible to see and interact with the bodies beyond the edge of the Teams frame. We cannot forget that this matters, and while digital platforms have allowed us, at times sanity-saving, interaction during lockdown, that this interaction is materially and spatially different to physically live, sensation-based teaching and learning.

As Peppler, Rowsell, and Keune (2020) remind us, when we take a posthuman approach to human/technology relationships, moving beyond technology as merely mediational, we have the capacity to work with “more generative, helpful and ultimately more ethical flattening of hierarchies across people and matter” (p. 1241). The posthumanly inspired *Exploding Boxes* animation, together with our learning from cutting through Pirbhai-Illich and Martin (2019), have allowed us to decenter ourselves and refocus our attention on how we are becoming within and alongside the technologies. The SciCulture participants’ sharings especially nudge open the door opened by Pirbhai-Illich and Martin a little further. The participants attend to diversity, histories, listening, and debating so that we can understand each other better. While we have to be clear that thinking about diversity does not equate to decolonizing, the participants’ work raised much greater awareness in the staff team as to how small a space there was for the participants’ own cultures, and experiences on our courses. And as we thread out of this cut, into the new SciCultureD program¹, the staff team are asking how can we pay attend to this, work with teaching materials to complement this, and ask pedagogic questions that provoke exploration of not only diversity but some of the more embedded colonizing structures that so heavily influence our education systems, our cities, and more.

Entangling Tales collage cut

After the explosion of the first digital collage, let us take a moment to pause – to breathe, to navigate, and to think – with the collage spaces of Entangling Tales. We invite you to immerse in a mesh of SciCulture’s third course’s spatial, material, and temporal cartographies by engaging with Figure 6/through this url: <https://youtu.be/iXmKneOszA8>

Woven through “Entangling Tales” are stories of growth and lines of flight, journeys and resting spots, presences and absences, distractions, embodied learning, community, wellbeing, and breakdowns. Here, images speak to materials, theory, facilitator and participant voices, and to SciCulture’s transdisciplinary practices. These and a multiplicity of other storylines move across the collage in rhizomatic ways threaded together in unexpected connections that are opened up by the collage aesthetic (Holbrook & Pourchier, 2014). Tim Ingold’s writings on entanglement and making (2008, 2010, 2013) have resonance with the collage creation. Ingold has developed compelling ideas about ethical ways of being in the world, and his work has been helpful to diffract through the collage to expand our thinking. Conceptual spaces created in these theory-practice experiences offer new possibilities and what Braidotti (2013) positively affirms as “potentia” for transdisciplinary workings for Higher Education.

Ingold (2010, p. 96) suggests artistic and technological creation through making is a practice of weaving in which practitioners bind their own pathways or “lines of becoming into the texture of material flows comprising the lifeworld.” This presents an alternative model to one where makers impose their designs on a material world. The making of SciCulture courses is not predetermined. Rather they can be viewed as the weaving of student and facilitator experiences and expertise bringing science, arts, and entrepreneurship together to co-create, enquire, and problem-solve around themes of future possible worlds. Facilitators join the forces and flows as the course progresses skillfully cutting, binding, joining, merging, and inter-mingling content to guide the direction.

In (re)viewing the collage, attention is drawn to one area where we linger (equally, you may linger elsewhere). Folding reveals a section where the angst of digital learning spaces has dissolved, replaced by playful, embodied experiences of doodling and Momigami, inspiring rhizomes, and a whole host of questions beside a void – an opening to the world. Here, a change of tone marks the gathering together and interweaving of

¹ SciCultureD Programme (2022–25): EU Erasmus+ funded <https://sciculture.eu/how-to-apply/>

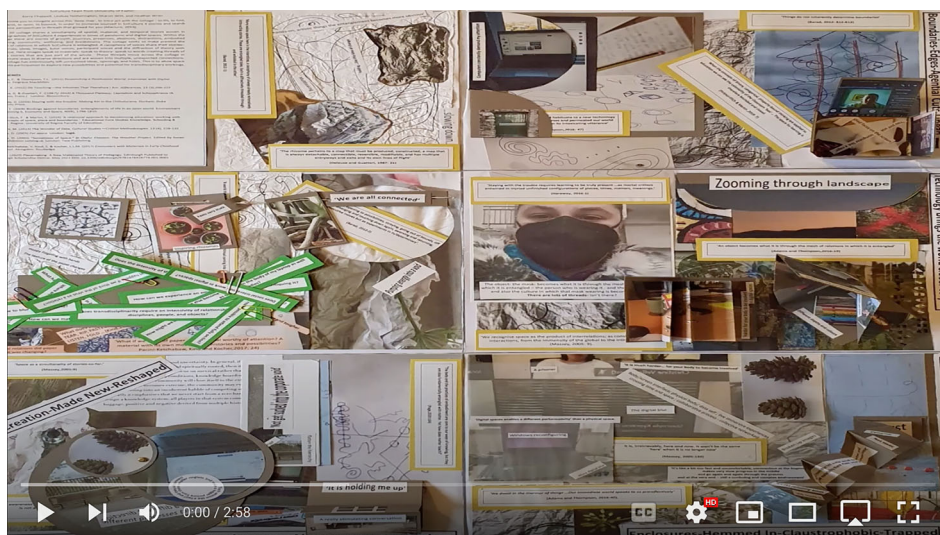


FIGURE 6. The Entangling Tales Collage.

movement, happiness, fidgeting, and journeying. This part of the collage (Figure 7) feels qualitatively different.

We begin by exploring the doodling/paper intra-actions within the Momigami, which (re)turned and (re)connected facilitators to SciCulture experiences within the data workshops. This revelatory pencil line (Figure 8) walked across paper, summoned felt memories from the digital course. Facilitators recalled the challenges and tensions of delivering through Teams spaces: peaks and troughs, restrictions and freedoms, repetition, u turns and direct routes, refrains and ruptured pathways, breakthroughs, and stuck places.

Doodling makes clear the SciCulture process is not straightforward; nor outcomes predetermined. The course is a messy journey full of complexities as facilitators and participants improvise by making paths following interests, materials, and ideas. One facilitator described their doodle: “SciCulture can be challenging because of the speed of the course introduction and the turbulence at the beginning as people try to understand a set of processes. At the beginning it is confusing for the students, but as they get to grips with the complexity, they find a way shown here by clearer lines.” As participants immerse themselves in the spirit and ethos of the SciCulture experience, rather than having preconceived ideas and expectations, they work to become familiar with SciCulture – going with the flow – trusting that something worthwhile will emerge. Ingold’s writings on making and thinking are helpful here. He describes knowing as “a process of active following, of going along,” that grows from material, practical, and observational entanglements for it is “by working, listening and feeling – by paying attention to what the world has to tell us that we learn” (Ibid,2013, p.1). However, Ingold (2010 p. 91) acknowledges this is not always straightforward and that for makers challenges are presented by “a world that does not stand still” and by working “with materials that have properties of their own and are not necessarily predisposed to fall into the shapes required of them, let alone to stay in them indefinitely” (Ingold & Hallam, 2007, p. 3–4). These thoughts have resonance with facilitators who embraced tensions and opportunities presented by spatial and material particularities of SciCulture pandemic times to create the third course online.

In the creation of SciCulture courses, facilitators have endeavored to adapt, change, and transform ideas to go with energies, flows, and both internal and external forces that exist with them rather than resist them. On the collage, this is illustrated by Momigami, where paper with doodles demands our attention. Paper has been woven, shaped, twisted, folded, manipulated, distorted, crinkled, creased, and straightened. Fidgeting with hands leads to new designs emerging. Momigami creates a dynamic process that literally produces heat alongside new energies and thinking which continually transform the shape, size, depth, and texture of paper in unexpected ways. As one facilitator participant remarked “by simply repeating the fold you add

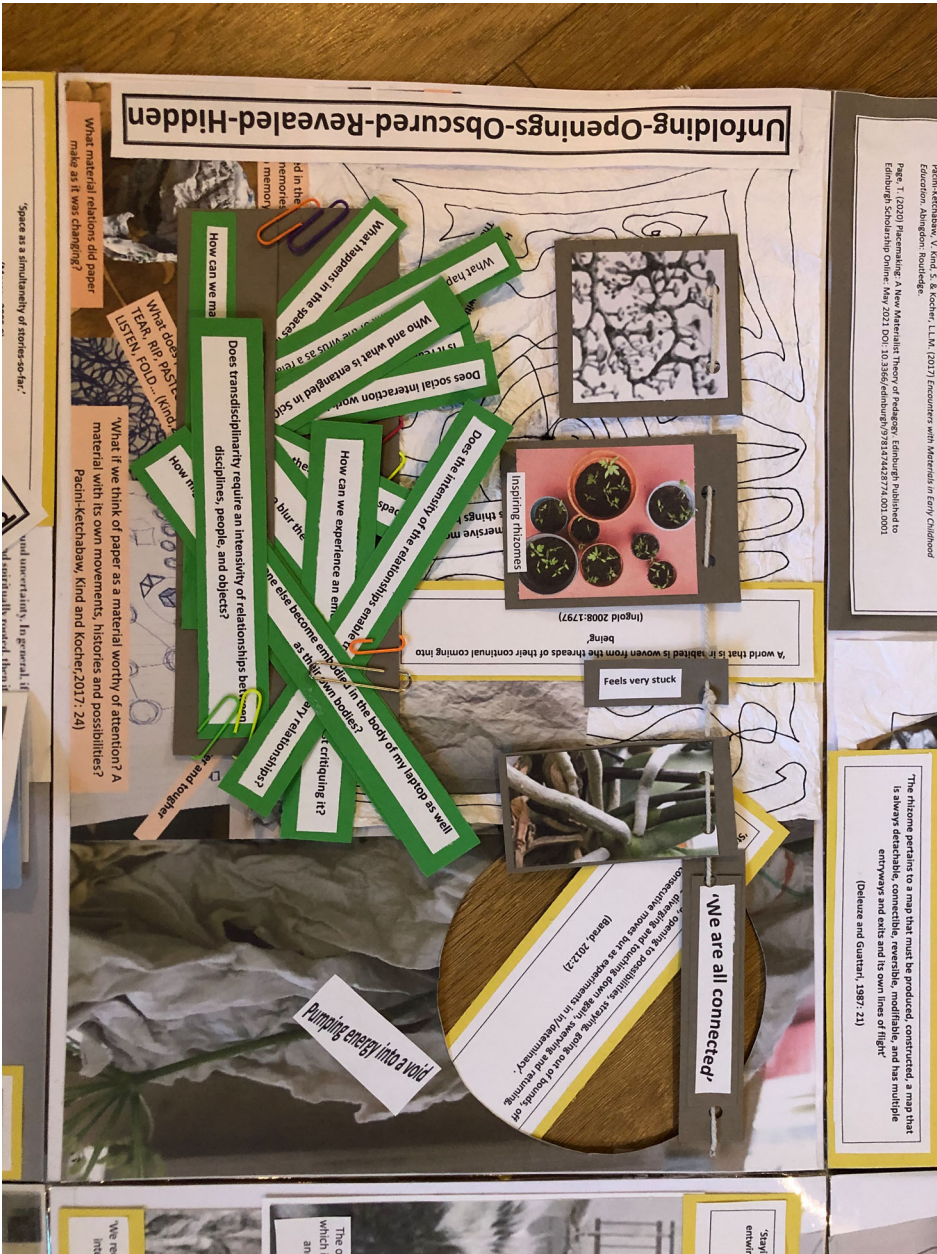


FIGURE 7. Part of the collage marking a change of tone.

new layers, perspectives, and directions.” Through diffracting these ideas, SciCulture can be seen not as “a space of occupation” which Ingold (2008, p. 1797) describes as “furnished with already-existing things.” Rather it is “a world that is inhabited . . . woven from the strands of their continual coming into being” (2008, p. 1797).

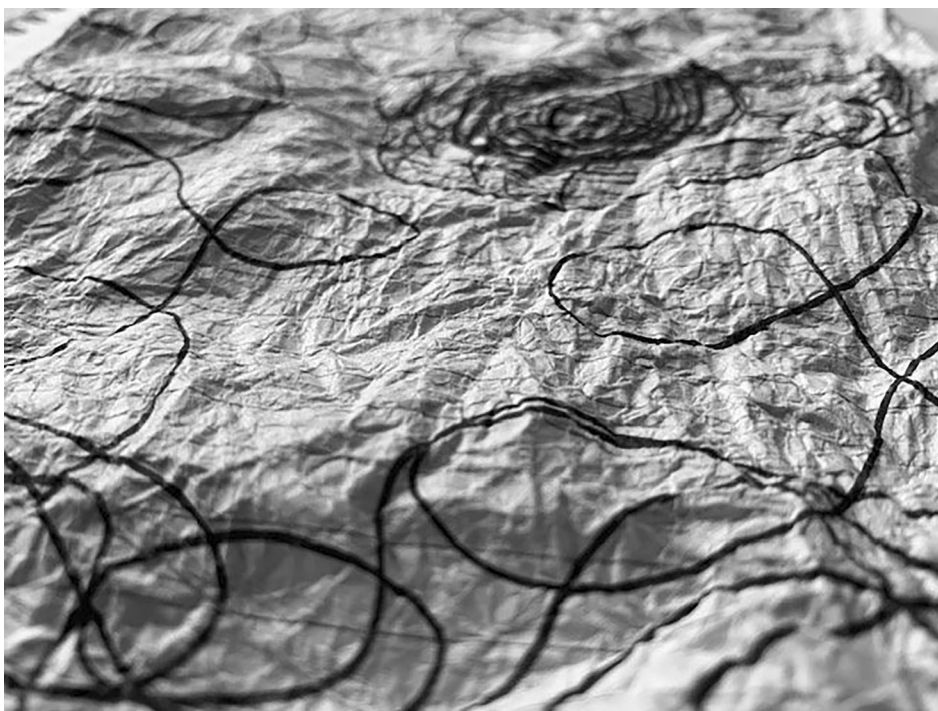


FIGURE 8. Revelatory pencil line.

When (re) viewing this quote on the collage, an unintentional diffraction is visible. An accidental cut has been made to Ingold's quotation – the word strand has been replaced by thread. This is an interesting stumble as the etymology of the two words is similar. Strand is a single thin line of thread, while thread is a long thin strand of cotton or fibers – especially when twisted. The multiplicitous nature of thread felt appropriate in this part of the collage assemblage with many questions appearing, hinting at the existence of numerous storylines left unexplored; the correct word has been diffracted back into the collage.

At the beginning of the SciCulture course, participants step into the void and wait in the “chaotic place of unknowing” (Somerville, 2008) to be met with a gathering of transdisciplinary materials, ideas, movements, facilitators, participants, and places. Threads can be followed, inter-woven, shaped, and reformed along a maze of trajectories to change and transform knowing, thinking, and being. Ingold (2008) suggests that this kind of making as weaving is a radical act. In the same way, SciCulture courses offer a challenge to the teleological and instrumental practices that dominate Higher Education. By embracing improvisation, SciCulture participants become what Ingold (2010, pp. 96–97) refers to as “itinerant wayfarers” who venture “along sonorous, gestural, motor lines that . . . graft themselves onto or begin to bud ‘lines of drift’ with different loops, knots, speeds, movements, gestures, and sonorities (Deleuze & Guattari, 2004, pp. 343–4).” Improvisation leads us once again to Braidotti (2011, p.7) and her thinking around the nomadic subject which asserts “the dynamic nature of thinking” reinstating “movement at the heart of thought.” As itinerant wayfarers, SciCulture participants are asked to leave habitual practices behind. They bring their cultural contexts, stories, disciplines, and experiences with them in order to engage in nomadic dialogue through transdisciplinary thinking. Within this discussion of nomadism (Braidotti's work to configure a cartographic understanding of political, cultural, political, and epistemological concerns), we acknowledge Braidotti's own alertness to the perils of subordination of racialized others. In remaining similarly alert, we aim to respect the nomadic experiences, which can inform Indigenous lifeworlds and which are being drawn on here. This is offering deeper understanding of improvisational and itinerant approaches to learning which, we are arguing, should be offered spaces within HE.

FOURTH COURSE

As fully explained in the Doings section above, we took one of the course participants' standout learning moments: the final presentation when we observed and listened to the other projects and used it to undertake a closer interrogation of one of the participants' end of week sharings. While asking their audience to choose a piece of pomegranate (a tree native to Malta) to eat, the group proposed a community garden project developing from Pomegranate Seed to Sprout to a Community Garden of Family Trees. This resonates with our recent application of Kassam's (2021) ideas about transdisciplinarity which encourage us to generate insights through academic enquiry working with communities of social practice. The participants argued that not only should we learn from community knowledges, but we should attend to how trees communicate symbiotically through mycelial fungi as an inspiration for how we might nurture communities of humans and others (plants) as a means to regenerate the wellbeing of our cities and the humans and other-than-humans within them. In response to all of the above, the following concepts shape, inspire and provoke the film's movement and visual content:

Planting. . .
seeds.networking.
boundary-removing. . .em-bodying. . .cracking. . .persisting. . .playing.
. . .layering.
breaking. . .sharing. . .industry. . .soil.cutting.flowing. . .remaking. . .urban.
rhizosphering. . . community. . .scatological. . .family. . . trees. . .
Regenerating. . .nature-culture. . .lines of. . .handling. . .traces. . .handing. . .concreting.
. . .pomegranates. . .thresholds. . .bodies-parting-togethering. . .juxtaposing.
. . .porosity.

Within the film, we have also picked up on Chappell's (2021) exploration of previous SciCulture courses' spatial atmospheres (Hunter, 2021), and storying potentials (Massey, 2005). Hunter (2021) discusses how pedagogy can be informed by a space's qualities and atmospheric conditions. She discusses how these ambient effects of the space and its atmospheres, can play with the body in an affective and affecting manner. Massey (2005) argues that we engage with space as a "simultaneity of stories-so-far," making places a collection of those stories, and, in turn encouraging us to think of our relations to spaces and places as becomings between ourselves and all of these stories. You will see these spatial atmospheres and storyings being played out in the film's site choices. Figure 9 shows a thumbnail from the film, *Kinasphere*; watch it here: <https://vimeo.com/788222550>

While many of our readers/engagers will be experienced in engaging with live and filmed movement work, we hope it is helpful to offer a series of provocations for those less experienced in this kind of engagement in order to draw you into this new realm. We do this as we recognize that working to understand movement/visual footage within a traditionally word-based arena is an area of development for both those producing and engaging with peer-reviewed academic articles. We hope that readers/engagers take these provocations in this spirit. We might ask you to start by re-watching the film a number of times, pause, and rewind in places that intrigue or discomfort you, play with the film as you would play with a paragraph of text that offered you new concepts, seek comparators in your experience of images and films, and perhaps focus on the following questions:

What do you notice in the film?

Does/how does the mesh of movement and visual in the film forefront observable and sensation-based elements of the SciCulture process which go beyond the word?

How comfortable is it to let go of words in an academic peer-reviewed article? Once you have let go, what aspects of the film resonate with your thinkings and doings in the area of transdisciplinary creative pedagogy?

Does/how does the film bring alive embodied, material, spatial, and time-based processes?

Does/how does it give you access to elements of SciCulture such as desire, power, affect, intent, and relationships?



FIGURE 9. *Kinasphere* film.

- Does/how does the film engage you in different ways of knowing beyond the word?
- Does/how does it offer new insights into human–material engagements? Do you, how do you feel bodies and movements intra-act with different environments?
- How does a film of movement engage you differently to a live movement performance?

RESTING AND MOVING ON

So now we take this opportunity to rest again, to settle for a moment to consider how HE creative pedagogy is being recreated through this focus on the matterings of materialities and spatialities. Our developing insights in relation to HE pedagogy are significant within a broader field of research which intersects trans-disciplinarity, creativity, materiality, and spatiality to more strongly center ethicality, social justice, and care for our common future (Braidotti, 2019; Chappell, Turner, & Wren, 2024, in press; Ulmer, 2017). In so being, they are relevant and impactful in a different way to traditional HE creativity research.

Our insights are a significant response to the threefold dissatisfaction with Western epistemologies' denial of embodiment, the other-than-human, and Indigenous knowledges and practices which drives our long-term imperative to move away from Western-dominated onto-epistemological approaches to pedagogy and research. This work is significant because it provides theory-practice examples as to how to respond to move beyond these threefold frustrations, while simultaneously developing theoretical understanding of posthumanizing creativity. This is possible within the SciCulture and ongoing SciCultureD projects where the pedagogic learning is generated within the project collective and then taken out into other pedagogies within which project partners engage. SciCulture/D provides a safe place for experimentation, which can then be threaded through slowly but persistently into shifts in more traditional institutionalized HE practices. As Taylor and Bayley (2019) states, this provides more capacious HE practice and contributes to what Braidotti (2019) calls the counter project to current Western understandings of creativity and higher education. We aim to do this through the practices exemplified in this article, while acknowledging that our attempts are imperfect and developmental, and while continuing to work to question the White episteme (Taylor, 2020).

So, our discussion and cuts around the *Exploding Boxes* collage is significant because it shows how attention to space, place, and boundaries through a relational approach (Pirbhai-Illich & Martin, 2019) can recreate HE pedagogy, to invigorate online learning practices which at times feel as though they are overwhelming embodied, tactile, and face-to-face pedagogies. Cutting theory through our first collage shines a light on how a sense of openness and porosity was created through techniques such as online collaborative movement work, tactile individual reflective work, and sharing virtual meals together. These played with spatial and other kinds of boundaries to nurture communality, to center arts processes to focus on human/other-than-human materiality, and to increase the diversity of the voices involved in how we solve wicked problems. Relating back to Braidotti's (2019) call above, these practices start to center ethicality differently by focusing on humans and other-than-humans, to focus on communal rather than individualized futures responses, and to address social inequalities through the inclusion and hearing of more varied voices. In relation to the latter, as Sriprakash, Nally, Myers, and Ramos-Pinto (2020) argue, there is much work to be done to expose institutional erasures of racism, colonialism, gender, and more. Transdisciplinary pedagogic practices, such as those within SciCulture, which centralize the spatiality and materiality/embodiment of many kinds of humans and other-than-humans can potentially create the openness necessary to push the boundaries of educational norms to ask questions as to who the missing others are, and how we can hospitably help them to contribute (Pirbhai-Illich & Martin, 2019).

Cutting Ingold's (2010) writing through the *Entangling Tales* collage, we understand better in this article how SciCulture courses are emergent, and can be viewed as the weaving of student and facilitator experiences and expertise bringing science, arts, and entrepreneurship together to co-create, enquire, and problem-solve around themes of future possible worlds. Relating to Braidotti's (2019)'s call above, the courses demonstrate working with care for a common future in action. A focus on pencil lines on Momigami brings through emotions like happiness and felt memories relating to all kinds of material as vital to SciCulture pedagogy and learning experiences. The theoretical cut emphasizes SciCulture is requiring all participants to attend "to what the world tells us" (Ingold, 2010) as part of its approach to problem-solving. This also resonates with the wider field's call to do ethics differently – if we attend to what the world tells us it requires a different approach to ethics than simply attending to what humans tell us; accommodating the ethical requirements of the environment, and other living beings makes for different priorities than just the preservation of humanity. The final step of this cut accentuates the positive generativity that can be gleaned from finding yourself in a chaotic place of unknowing (Somerville, 2008) at the beginning of a course, and how through improvisational approaches (with all kinds of materials) participants become itinerant wayfarers (Ingold, 2010), leaving behind habitual learning practices to engage in productive transdisciplinary nomadic dialogue. If we again think about how SciCulture/D incorporates responses to social injustice, this removal of traditional learning structures (however unnerving) creates opportunities for new ways of knowing, new voices, and new values which can contribute to re-structuring HE educational experiences with flatter hierarchies and greater equalities to better prepare students to contribute to societal change. Through both Ingold's cut and the film's focus, amidst these new voices and ways of knowing we are now more alert to the other-than-human, the Indigenous, and other communities of social practices that stretch us into multi-epistemic literacies (Sundberg, 2013).

The thread of new ways of knowing then brings us to a differently significant resting point. Through the use of collage, animated film, and edited movement film, this article pushes for much greater inclusion of different modes within academic publishing. This is part of a growing movement in educational research (e.g. Burnard, Mackinlay, Rousell, & Dragovic, 2022; Chappell, 2024, In press). Our article argues that as a community of academic peers, we need to work together to increase all our literacies in how to create, engage with and "read" embodied, visual, and other modes which in other arenas (e.g. Eisner, 2004; Summers, 2021) have been recognized for decades, as ways of knowing which are not reducible to words. This will require us to understand ethical procedures differently beyond permission structures for individualized human participants; it will require us to work more openly with others of all kinds who have skill and/or presence in varied ways of knowing to ensure equitable inclusion of being and becoming beyond the word (Hunter, 2021) and beyond Western onto-epistemologies (Mehta & Henriksen, 2021); all within a care for common HE futures that are defined by compassionate, tenacious, and creative transdisciplinarity.

Returning to our positioning of this research within our conceptualization of posthumanizing creativity (Chappell, 2021), we are able to develop this theory here through its resonance with Ingold's (2010) understanding of creativity as a process that "feeds forward." This helps us to understand how the diffractions presented in this article provide ongoing generative movements, which are improvisational. Ingold and

Hallam (2007) argue that it is in this improvisational forward movement that the “work” of creativity is to be found and where we would agree the power for change in posthumanizing creativity lies. This kind of creativity not only fuels participants’ learning but also changes the pedagogic structures in ways that prior to the encounter were unknowable. We are continually working with an eye to this and to not closing down or colonizing future educational possibilities. This creativity then fuels our team as we persist with making change through plans for a transdisciplinary module in our HEI designed from our SciCulture experiences – where we are having to improvisationally push against, rather than be supported by bureaucratic systems and structures. We also provide a safe online space for other HE educators to experiment with re-creating their HE pedagogy through the toolkit (<https://sciculture.eu/coursekit/>) that we have developed from the project.

Our final invitation from this resting point, before we move on, is to provoke those engaging with this article to act creatively with the materialities and spatialities around them in their HE pedagogies and to work with these to reimagine practices and even contribute to changing structures. How can HE practitioners and researchers: follow reference trails to read more about the rich posthuman and postqualitative literature that now exists and use this to change their work; try out embodied, artistic, and creative practices in online learning; apply more communal approaches to learning and assessment to encourage decentering the individual; ask questions about which voices (human and other-than-human) are not present in teaching and research and how/why they might better include them; raise their own set of emergent posthuman questions to drive their learning forward; work with colleagues from other disciplines to respond to global challenges within a care for a common future; all the while living a little easier with discomfort and not knowing?

We would urge colleagues to be inspired, as we have, by Braidotti’s (2019) call to acknowledge the damage that Western cognitive capitalism has done in HE and to get going, to humbly put “the motion back into e-motion and the active back into activism.” Do this in the company of diverse others “not all of them human,” and do this via diverse ways of knowing and becoming, acknowledging together how exhausting this is against the weight of neoliberalism, but fueling action through shared relational strength.

DATA AVAILABILITY STATEMENT

Research data not shared.

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AUTHOR NOTE

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