

# Attunements to the Ethical in Design and Learning

Shirin Vossoughi, Northwestern University, shirin.vossoughi@northwestern.edu

Ava Jackson, Northwestern University, AvaJackson2015@u.northwestern.edu

Megan Bang, University of Washington, mbang3@uw.edu

Beth Warren, Boston University, bwarren@bu.edu

Ann S. Rosebery, TERC, ann\_rosebery@terc.edu

Thomas Philip (discussant), University of California, Los Angeles, tmp@ucla.edu

**Abstract:** Within the learning sciences, conversations around the political dimensions of learning and design are growing, with implications for research epistemologies, approaches to social change-making, and possibilities for impact in the lives of children and communities. This symposium seeks to explicate, amplify, and further theorize ethical dimensions of human learning that orient our thinking towards what *could* or *ought* to be and sensitize us to the ways ethics, like politics, are always mediating learning. We explore these questions: In what ways do attunements to the ethical dimensions of learning, teaching, and design evolve in activity to expand opportunities for children and youth to grapple with the world as it is and imagine how it might be? In what ways does relationality shape and become shaped by emergent ethical attunements in learning environments? How might research and design that center the ethics of learning shift how “impact” is defined and assessed?

**Keywords:** ethics and politics of learning, geographies of responsibility, relationality, epistemic heterogeneity

The 21st-century marks a critical time in human history, one that demands the re-mediation of social structures of human communities towards more sustainable and just assemblages of forms of life. While the complexity of the task before us is stunning, we argue that a pivotal dimension of change rests on the remaking of relations between humans and more than humans, that is, the natural and material worlds of which humans are a part (Tallbear, 2011; Latour, 2013). Implicitly or explicitly, human activity draws together epistemic, ontological, and axiological commitments that vary across cultural communities and places, even as they traverse global and local trajectories. Importantly, this activity is constructed relationally, and, as such, as Massey (2005, p. 10) argues, poses challenging questions about the politics of the geography of those relations as well as the ethics of our relationships to and responsibility for those relations. Designing learning for expansive relationality attuned to these questions requires, we suggest, axiological innovations (Bang et al., 2016) beyond the normative forms often manifest in learning environments characterized by human domination and entitlement (Cajete, 2000; Wildcat, 2009). A focus on axiological innovations entails attention to the values, ethics, and aesthetics – that is, what is good, right, true and beautiful – that shape possible meanings, meaning-making, positioning and relations in the design and implementation of expansive learning ecologies.

Within the learning sciences, conversations around the political dimensions of learning and design are growing, with important implications for research epistemologies, approaches to social change-making, and possibilities for impact in the lives of children, families and communities. In a special issue of *Cognition and Instruction*, Bang & Vossoughi (2016) featured research aimed at making power, history, relationality and epistemic heterogeneity explicitly engaged aspects of designing for social change-making. Similarly, the *Politics of Learning Writing Collective* argues:

to embrace learning as situated means to conceptualize it as inherently political: It is always embedded in and articulated through hierarchies of power and tied to particular visions of possible futures...we know that at minimum our efforts ought to resist the tendency to depoliticize the situated nature of learning and withstand the inclination to ignore the always-present historical and ideological dynamics and contexts (2017, p. 5).

In a resonant vein, Esmonde and Booker’s (2016) edited volume *Power and Privilege in the Learning Sciences* brings together sociocultural theories of learning with different strands of critical social theory in the effort to engender concepts and lenses adequately sensitive to the “always-present” political and ethical dynamics of learning and teaching. Building on the powerful ways sociocultural and cultural historical theories

have intervened to widen and deepen the study of learning beyond individualism and ethnocentrism, these recent interventions assert that learning is always cultural *and* political. Further, they embody a critique of normativity and the ways learning is entangled with oppressive political and economic systems, as well as a call for critically imagining, designing and closely studying learning as relationally responsive ways of being, knowing and acting (Shotter, 2006). Though not always explicitly stated, both of these moves involve fundamental questions of ethics and values.

Importantly, attention to the political is not new to studies of learning; rather, the terms of engagement with the politics of learning are taking new forms. Situating ourselves within both the sociocultural and political turns in the learning sciences, this symposium seeks to explicate, amplify and further theorize the ethical dimensions of human learning, those that orient our thinking towards what *could* or *ought* to be, and sensitize us to the ways ethics, like politics, are always mediating learning.

The papers in this symposium explore how new “geographies of responsibility” (Massey, 2004) emerge when ethical attunements in learning and design become an explicit focus of attention. We explore these questions: In what ways do attunements to the ethical dimensions of learning, teaching, and design evolve in activity to expand opportunities for children and youth to grapple with the world as it is and imagine how it might be? In what ways does relationality shape and become shaped by emergent ethical attunements in learning environments? How might research and design that center the ethics of learning shift how “impact” is defined and assessed?

We will engage the audience in considering ways in which attention to politics implicates ethics (e.g., in future-makings), how politics and ethics mutually constitute one another, and how these dynamics shape what we might call theoretical-, design- and construction-oriented dimensions of impact.

“(I)f we can prepare ourselves to ‘think-with’ *living things* to guide us in our thinking...then not only will that change everything that in the past we have thought of as being well-known to us -- the nature of reality; knowledge and knowing (epistemology); the nature of communication and language; meaning and understanding; ways of being (ontology); and our everyday ways of relation to others and ‘othernesses’ around us (attitudes, orientation, and ethics) -- but it will also lead us into recognising the influence of factors to which, in the past, we have given no attention at all. (Shotter, 2015, p. 8)

## **Embodied pathways and ethical trails: Attuning to the relational and axiological dimensions of learning**

Shirin Vossoughi and Ava Jackson, Northwestern University

In *Talk and Social Theory*, Erickson argues that “social changes of a deep-rooted kind, by their very nature, involve alterations in the character of day-to-day social practices” (Erickson, 2004, p. 160). This paper is part of a larger project that both draws from and widens this argument by paying close attention to the role of embodiment and relationality in the moment-to-moment and day-to-day development of learning environments that aim to enact educational dignity (Espinoza & Vossoughi, 2014). We define embodiment as the physical, gestural and artifact-mediated dimensions of human learning, as well as the kinds of ethical and pedagogical values embodied in talk and interaction (Vossoughi, Escudé, Kitundu & Espinoza, Under Review). Thus far, this work has looked closely at the kinds of embodied assistance that mediated rich forms of joint activity within an after-school setting focused on making/tinkering (the “Tinkering Afterschool Program” or TAP), as well as the ways adult and young adult educators’ analysis of photographs and audio-video recordings led to deeper forms of co-presence and relationality with young children.

Taking up questions of ethical attunement and relationality, this paper asks: how do relational histories and salient moments of embodied assistance mediate future action and meaning? Through a systematic analysis of ethnographic and interactional information spanning three years of programming in TAP, we found that particular forms of assistance and relationality across participants created *embodied pathways* that others then took up, plied and re-created in future moments. We define embodied pathways as *courses of possible action* involving participants’ voices and bodies that both represent and open up particular kinds of relations (ethical, intellectual, political). We argue that the felt experience of salient instances of assistance imprints (leaves an impression of) such pathways within memory, creating resources for possible action in the future. We substantiate this finding through three distinct and complementary cases: 1) a five-minute interaction wherein careful forms of embodied assistance used to support one child to learn how to use a hot-glue gun were immediately used by that child to guide her friend’s learning in both resonant and novel ways; 2) a case in which two children were deliberately supported to learn how to collaborate or form a “we” within a marble

machines activity in ways that were appropriated and further improvised by the pair across the week; and 3) a case spanning 3 years that looks at the ways one young participant grew into the role of a facilitator, and came to organize learning for younger children using key forms of embodied assistance valued within the setting.

Across distinct time-scales, these cases evidence the ways movements that are improvised within the flow of pedagogical activity can create resources for future activity in ways that illuminate local processes of cultural production—in this case, the shift from normative, individualized forms of education towards a model of joint activity built on the notion of people becoming keepers of one another’s learning. The term “cultural production” amplifies the improvisational dimensions of this shift, as well as the aesthetic dimensions of pedagogical activity. In this case, the shift towards joint activity was also aimed at surfacing and addressing the re-emergence of racialized and gendered inequities with regards to who received different forms of assistance within the setting (who was more likely to have an artifact taken out of their hands, or who was trusted to use a tool, etc.).

The notion of “pathways” is germane to the study of gesture and embodied interaction because there are literally paths through the air that may be seen as “marked” or accentuated by participants in ways that create potential openings for others to utilize, explore, and reshape. Though research on embodied cognition tends not to foreground the relational histories among participants within a focal interaction, analyzing these pathways has helped us to see learning as both deeply historical and radically future-making. In a genetic sense, we might say that participants “re-trace” prior moments with their bodies/hands, or that future moments carry the trace of prior relations and systems (Bakhtin, 1984; Gordon, 2008; Wolfe, 2016). Looking forward from present moments, we argue for the salience of interactional “firsts”—the initial turns within an exchange, or the initial moments and days of a program or setting (Hansen, 1989)—as creating value-laden movements or “substrates” (Goodwin, 2017) that can linger in the air.

We conclude with a discussion of key pedagogical and theoretical implications. First, our analysis of gestural pathways offers one way to see learning (shifts in participation, new relations with others, with materials and tools) through the movements of the body, and to conceptualize collective learning as tied to the *live* choreography of activity within a setting over time. Understanding design as a kind of compositional activity, this lens can support educators in being reflective and intentional about the pathways we are enacting in the moment. In other words, making the ethical explicit engenders new responsibilities and domains of consideration for design. Our findings also attune us to the ways pedagogical movements are always ethically and politically laden (Bang, et. al., 2016), enmeshed with processes of social reproduction, contestation and transformation (Erickson, 2004). Orienting towards present action as always holding the potential to create expansive meanings that can shape future moments in unanticipated ways offers a way of perceiving real-time activity that is sensitive to the “ethical trails” we are etching in the air. On a small but significant level, we see in such everyday moments how settings *come to be*, and children, youth and adults make decisions about who they want to be in the world, what kind of thinker, teacher, or friend.

## **The Hummingbird story: Navigating ethical multiplicities of heterogeneous nature-culture relations in learning environments**

Megan Bang, University of Washington

In this paper I explore the axiological engagements and possibilities that are designed for and enacted in a STEAM learning environment focused on forest ecology and climate change with 1<sup>st</sup>-12<sup>th</sup> graders. Axiological positionings of self and others with respect to knowledge, knowing, and human activity are routine parts of interaction (Lemke, 2002). This study is part of an iterative community-based design project which involved community members, researchers, and graduate students to design and implement land-based learning programs that facilitate and support Indigenous ways of knowing and western science. The program was designed to focus on nature-culture relations and learning about complex ecological systems through relational onto-epistemologies and mobile pedagogies of walking, talking, and storying the land (Bang & Marin, 2015; Bang & Medin, 2010). The framing question for the STEAM camp was: *How can we live in respectful, reciprocal, and responsible relations with our lands and waters?* In this paper, I analyze the ways in which these forms of relations were explored and enacted and the kinds of affordances or constraints they placed on learning and teaching about nature-culture relations and, more specifically, complex ecological systems.

The data for this paper come from four sources. The research team collected video and audio recordings of the program that included 30 youth and 4 educators as well as additional community members, artists, and scientists who also co-taught in these environments. The video data included both panoramic video of the activity as a whole as well as 5 students who wore point of view cameras during activity. Audio was also collected of all of the teachers in learning environments so that we could ensure the capturing of all of their

interactions. In addition to the video and audio, we collected the artifacts produced by learners in the learning environment. Finally, we also took field notes. Analytically for this paper I utilized a microethnographic approach. Microethnographies allow the researcher to examine the interplay among moment-by-moment participant interactions with each other, with artifacts, and with the academic tasks, which are reciprocally mediated by, and mediating, the social construction and dynamics of the activity (Gee & Green, 1998). More specifically, I take a microlongitudinal and microlatitudinal approach to characterize how ethical sense-making evolved over time and reiteration (longitudinal) in learning, as well as in moments of interaction across settings or in movement during learning (latitudinal) (DeLiema, Lee, Danish, Enyedy, & Brown, 2016). To do this, I utilized interaction analysis to examine the ways in which ethical dimensions of nature-culture learning were enacted.

I focus this paper on a collective experience with the finding of an injured Hummingbird in the forest and the multiple responses that unfolded from the initial discovery. I examine the teacher and community member driven responses to the Hummingbird as well as student responses and the different ethical stances and relationships that are articulated and enacted over the course of the program. I find that there are 5 key events that shift the semiotic landscape (Goodwin, 2013) with respect to ethical dimensions in nature-culture relations that created different possibilities for learning. These include: 1) the initial encounter with the Hummingbird and the accidental killing of and response to the Hummingbird by a facilitator; 2) student and community members responses to the accidental killing of the Hummingbird; 3) teachers' facilitated reflection of the encounter; 4) students' spontaneous activity and sharing with their families; and 5) students' incorporation of the Hummingbird story into the culminating projects in the learning environment. I explore the ways in which the ethical responses by the facilitator, community members, and teachers marked significantly different forms of nature-culture relations that afforded different understandings of ecosystems and the roles and functionings of species in these ecosystems as well as human behavior and engagements. These differences were marked by differences in western and Indigenous knowledge systems as well as differences in expertise about ecosystems. Further, I explore how shifts in pedagogy across these key events reflected different pedagogical perspectives and adults' ethical attunements and perceived responsibilities (Shotter, 2015; Massey, 2004; Lawson, 2007) to children.

Based on the five incidents, I propose a set of design principles as well as pedagogical practices to support ethical engagements with nature-culture relations in science learning relevant to 21<sup>st</sup>-century demands. Socio-political discourse about 21<sup>st</sup>-century demands, such as climate change, are only increasing. Yet, largely as a field we have continued to focus narrowly on the science of climate change, leaving teachers underprepared to navigate the kinds of questions that learners bring to learning environments. This work helps to develop frameworks and practices for teachers and students to robustly take up 21<sup>st</sup>-century science learning with its accompanying ethical demands and entanglements.

## **Microbe-human relations: Imagining new geographies of responsibility through artscience**

Beth Warren, Boston University, and Ann S. Rosebery, TERC

In U.S. schools, intellectual traditions rooted in Cartesian influences selectively shape the aims, practices and phenomena highlighted as central to disciplinary learning. This “form-shaping ideology” (Bakhtin, 1984) structures a particular conceptualization of the relations between natural and cultural (or human) worlds in disciplinary learning. At its core, this conceptualization positions humans as distinct from and apart from the natural world in relations of mastery and entitlement (Latour, 2013). This form-shaping ideology continues to dominate disciplinary learning, functioning as a tacit and pervasive form of settled expectation (Harris, 1995) that restricts the scope of possible meanings and meaning-making in classrooms, i.e., how students and teachers imagine, come to know, and attend to relations between natural and human worlds (Bang & Marin, 2015; Bang, Warren, Rosebery & Medin, 2012; Warren & Rosebery, 2011).

In its orientation to human entitlement, the dominant conceptualization of nature-culture relations stands in stark contrast to cutting-edge research in a variety of disciplines (e.g., ecology, geography, oceanography, anthropology), which is re-conceptualizing relations among human and more than human forms of life in new “geographies of responsibility” (Massey, 2004). In these disciplines, complex socio-ecological futures are being re-imagined through relations of reciprocity, humility, responsibility, and sustainability (Cajete, 2000; Hulme, 2009; Massey, 2005). In this work, we connect these disciplinary developments to educational designs that engage epistemic heterogeneity not as a problem to repair or overcome but as foundational and generative in learning and teaching (Bang & Vossoughi, 2016; Rosebery et al., 2010).

In this paper, we share findings from a collaborative research endeavor to design an “artsience pedagogy” that aims to cultivate youths’ attunement and involvement *with* complex ecological phenomena, specifically the emerging interdisciplinary field of the human microbiome. Over three years, a design collective of learning scientists, high school arts and science faculty, microbiologists, and local independent artists worked together with two main design goals in mind and in hand. One goal was to build from the microbial turn in recent biology to desettle dualistic structures of nature-culture relations rooted in Cartesian and colonial logics. As understood by anthropologists Heather Paxson and Stefan Helmreich,

(t)he microbial turn marks the advent of a newly ascendant model of ‘nature’, one swarming with organismic operations unfolding at scales below everyday human perception, simultaneously independent of, entangled with, enabling of, and sometimes unwinding of human, animal, plant, and fungal biological identity and community...Microbes are not tokens...of the ‘age of biological control’..., but are rather pointers to a biology underdetermined and full of yet-to-be explored possibility. (Paxson & Helmreich, 2014, pp. 166-167)

A second design goal, resonant with these shifting dynamics in biology, was to open up more relationally responsive, epistemically heterogeneous, participative modes of thinking, feeling, being, and making (Shotter, 2006) than are conventionally made available in high school science to youth from historically non-dominant communities. Taking seriously the heterogeneity of human sense-making, the artsience pedagogy was designed to engage youth in exploring and creating “narratives of life” (Heath, 1986) imagined through relations of reciprocity, humility, responsibility, and sustainability (Cajete, 2000; Hulme, 2009; Massey, 2005; Shotter, 2006) rather than human domination and entitlement.

Students at a public high school with an arts focus were invited to explore microbe-human relations through engagement with multiple, narrative-centered practices of art and science. The idea behind this artsience repertoire is that multiple, narrative-centered engagements would bring to life the ordinarily invisible presence of microbes on the human body, making them newly legible as forms of life of varying color, shape, contour, texture, and growth, and making them newly speakable as a part of “a world around us ‘here’” (Shotter, 2006, p. 112). Working with practicing artists and scientists over four weeks in the official space of a biology class, students cultivated microbial communities living in and on various parts of their bodies (e.g., the palms and fingers of their hands, forehead, armpits, belly buttons) and then explored possible meanings of microbe-human relationships through varied artistic and scientific forms of engagement. They choreographed movement phrases to experience microbial ubiquity and scale. They sculpted imagined microbial worlds with wood reeds. They musically scored microbial growth as it unfolded in Petri dish cultures of their skin microbiomes. They painted expressive portraits of microbe-human relationships. They scripted and dramatized microbe-human encounters. They engaged with emerging findings and open questions in human microbiome science. Towards the end of their inquiry, the students created and shared an “artsience story,” defined as an artistic and scientific expression that a) explored an aspect of the human microbiome or their own process of inquiry that had become important to them, and b) creatively communicated this to people they care about.

In this paper, we draw on data that includes the artsience responses of three students and their narrative accounts of their responses in individual interviews. Two students co-created a hip-hop song (“Bacteria At Its Finest”). In the lyrics, they riff on the genre of a love song by counterposing third-person negative societal narratives about bacteria with a first-person bacterial point of view. Another student created facial body art, which she entitled “False Expectations vs Reality,” to express “the drastic difference there is between what people think (about bacteria) and what it actually is.” Using narrative and discourse analytic methods, we are exploring the ways in which the students conceptualized, expressed, and evaluated microbe-human relations in their artsience stories. Preliminary analyses show the students narrating their growing attunement to microbes and humans as being in a “we” rather than an “other” relationship, answerable to each other. In their lyrics and narration, the students creatively used the meaning-making resources of their art forms to move between points of view and layer multiple voices to chart new geographies of responsibility linking humans and microbes in withness-relations, e.g., of mutual care. They spoke of human cultural practices as creating vulnerabilities for both humans and microbes (e.g., hand sanitizers, wide-spectrum antibiotics, consumer capitalism), and emphasized their growing sense of responsibility to educate others *into* new understandings of microbe-human relations. They expressed an ecological sensibility toward microbial ways of being and living, which they marked aesthetically (“the true beauty behind our microbiome”) as well as politically (“this doesn’t stop at just me”) in a new ethical formation of relational involvement.

Building on Shotter's work, we suggest that, in an arts/science pedagogy of the kind we have been exploring, transdisciplinary practices of attending, thinking, feeling and making support expansive ethical engagements *with* complex socio-ecological phenomena. Learning becomes the cultivation of new possible "responsive living relations" *with* phenomena, relations that emerge in and through participative modes of inquiry (Shotter, 2006). We see high school youth, virtually none of whom identified with school science, responding to this vision, imagining themselves into new geographies of responsibility as they engage creatively *with* the complexities of socio-ecological future-making.

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