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The Parental Milieu: Biosocial connections with nonhuman animals, technologies, and the Earth

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Abstract

This paper develops the concept of the “parental milieu” as a theoretical tool for biosocial research in environmental education and the emerging field of critical life studies. Using the concept of milieu as a catalyst for theoretical inquiry, we map several movements and variations of the term through the 20th century works of von Uexkull, Simondon, and Deleuze and Guattari. This results in the development of four propositions that connect the parental milieu with the territorial milieu of the animal world; the technical milieu of ubiquitous digital networks; the metabolic milieu of consumption; and the trans-qualitative milieu of fluid relations and queer kinships. We conclude with a call for transgenerational research that addresses the ways that the parental milieu intersects with children’s environmental learning and ethico-aesthetic sensibilities.

Keywords: critical life studies; milieu; parenthood; posthumanism; environmental education; biosocial research

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Introduction

One cannot simply dismiss the problem of life, precisely because life presents the most immediate of political imperatives, given the major threats to life in all its organic forms in the 21st century. (Weinstein & Colebrook, 2016, p. 2)

We live in times where the changing material conditions of life are outpacing human ways of knowing and understanding. Anthropogenic climate change, the mass extinction of plant and animal life, and the chemical contamination of air, food, soil, and water resources are transforming not only what we might think of as “the environment”, but also the biomaterial and aesthetic sensibilities that constitute the experience of *being alive* (Rousell & Williams, 2018). We also find ourselves living in an age in which the very nature of life is being reconstituted through postgenomic sciences, ubiquitous computing, and artificial intelligence, such that the boundaries between human and nonhuman, life and non-life, natural and artificial, are characterised as plastic, permeable, and open to continuous variation (Braidotti, 2013). For many scholars these changing conditions of Earthly life have taken on the name of ‘Anthropocene’, an epoch defined by the total imbrication of human life processes with the Earth’s ecological and geophysical systems (Rousell, 2016; Steffen et al, 2015). Other scholars have been hesitant to adopt a term so saturated with the association of ‘Anthropos’, and its aftertastes of human dominance, supremacy, and exceptionalism (Colebrook, 2014).

While the fields of environmental education and childhood studies have recently drawn attention to the changing nature(s) of childhood in the Anthropocene (Malone, 2016; Taylor & Pacini-Ketchebaw, 2015), the changing nature(s) of parenthood have not received the same attention. With the exception of several exemplary publications (Knight, 2016; Trafi-Prats 2018), we are not yet seeing a critical mass of posthumanist “parenthood studies” committed to re-imagining parenthood in the age of the Anthropocene. We also find that relatively little attention has been paid to the environmental dynamics of parenthood and the “family milieu” in environmental education research (Payne, 2005), which continues to focus primarily on children’s environmental learning experiences outside the home (Meeusen, 2014). This is not surprising given the sense of wonder, imagination, and “otherness” that is often discovered through research into the environmental worlds of children, our own recent projects included (e.g. Rousell, Cutter-Mackenzie, and Foster, 2017). In place of the wonder, imagination, and seemingly boundless energies of childhood, parenthood is more likely to be associated with exhaustion, busyness, stress, complicity, and subservience to the neo-liberal demands of post-industrial capitalism (Trafi-Prats, 2018). Parents are perhaps less compelling subjects and co-producers of research due to the inaccessibility of private family lives that take place behind closed doors. Yet this occlusion of the parent from critical posthumanist inquiry has become problematic, given the primordial agency that parenthood plays in human life processes and their entanglements with nonhuman animals, technologies, and the Earth’s ecological systems. Indeed, the experience of parenthood is co-extensive across all forms of animal life, with all mammals in particular sharing in caretaking practices of feeding, protecting, teaching, and supporting their young.

Parenthood becomes an increasingly precarious and urgent concept in an age when the human population has tripled in a single lifetime (McKneil & Engelke, 2014), and 52% of the world’s nonhuman animal life has been decimated over the same period (WWF, 2014). Parenthood is also intimately connected with the accelerating reality of human-induced climate change, which is drastically altering the qualities of life for both human and nonhuman populations in many parts of the world. Conventional understandings of parenthood are also being destabilised by what Weinstein and Colebrook (2016, p. 3) describe as a “new milieu of twenty-first-century life sciences, life philosophies, and life politics”. Postgenomic research in contemporary biology suggests that environmental and social conditions have transgenerational impacts on biological functioning, cultural development, and gene expression in human populations (Frost, 2016; Keller, 2014; Meloni, 2015). Recent findings in embodied cognitive science indicate that sentient, perceptive, cognitive, emotional, and social experiences are inseparable from somatic processes, including sensory-motor activity, directional motility, biochemical gradients, and pre-cognitive affective responses (Protevi, 2013). The cumulative sensing and computational capacities of 21st media networks have also become powerful agencies and elemental components of everyday household environments (Hansen, 2015). Bodies, cultures, technologies, and environments are now understood to permeate and interpenetrate one another, with the porous membranes of skin, cell, and touchscreen operating as “fluid mosaics” for the continuous “trafficking” of molecular, biochemical, and semiotic flows (Frost, 2016, p. 27). These radical changes in the nature(s) and understandings of life in the 21st century call for a renewed conception of the parental lifeworld in response to the rapidly changing social, biogenetic, technological and environmental milieus of the contemporary world.

Critical Life Studies and Biosocial Research

We situate our inquiry into the milieu of contemporary parenthood within what Weinstein and Colebrook (2016) refer to as “critical life studies”, an emerging transdisciplinary movement that brings together a range of critical perspectives on the changing nature(s) of life in the 21st century. Critical life studies is proposed as an open rubric for the grouping of critical projects and studies for whom life has become a framing problem, including affect theory; new vitalisms, materialisms, and empiricisms; critical race theory; critical disability studies; critical animal studies; trans and queer studies; posthumanisms of various kinds; science and technology studies; speculative realism; postcolonialism; material feminism; biosocial sciences; accelerationism; critical climate change; and Anthropocene studies (p. 4). In assembling this vast “tangle of approaches” to address the framing problematic of life, critical life studies seeks to “recapture the tension that posthumanism has ceased to sustain” (p. 5). Weinstein and Colebrook offer an alternative to “standard posthumanisms” which have been founded on rhetorical gestures that decenter the human from an assumed position of privilege within social inquiry and critical thought. Such moves can be overly hasty in their desire to dissolve the figure of the human in favor of vague conceptions of “materiality”, effectively passing over and sometimes abandoning critical questions of life in theoretical attempts to erase or dislocate the humanist subject. Instead Weinstein and Colebrook propose a turn to the *inhuman*, as “the terrain within which the figure of the human (and its posthuman others, which would include animals, bacteria, viruses, plants, technology, and virtuality) takes place” (p. 60). In advancing the study of inhuman forces, affects, technologies, forms, and modes of contemporary life, critical life studies encourages us to critically (re)turn to the figure of the human through the concept of milieu. Rather than discarding the human in order to perform posthuman abstractions, this paper seeks to map inhuman connections between parental lifeworlds and the milieu of other animals, technologies, and environmental forces.

If for no other reason, the figure of the human must be critically engaged if we are to address the unprecedented and lasting impacts of anthropogenic activity on the Earth’s biological, climatic, and ecological systems. As Samantha Frost (2016) argues in her recent book *Biocultural Creatures*,

What we need in place of the fantasy of human exceptionalism is a different figure of the human, one that does not succumb to the conceits of old but also does not conceptually dissolve humans as identifiable agents and thereby absolve them of the crises that mark the Anthropocene.

For Frost, the new images of the human offered by the postgenomic life sciences open up radical possibilities for critical inquiry in the posthumanities and social sciences. Emphasising the porous, permeable, and compositional nature of the human as *creature*, Frost argues for a “biocultural” conception of the human that is constantly being assembled and re-assembled through the total imbrication of social, technical, biological, and ecological processes. The possibilities of such a reframing of the human are only beginning to be explored in the field of education, as seen in recent developments in the area of biosocial research (de Freitas, 2018; Gulson & Webb, 2018; Rousell, Gallagher, & Wright, 2018; Aronsson & Lenz Taguchi, 2018; Youdell, 2017; 2016). Scholars working in this area are developing new theoretical and

empirical modes of inquiry that bring educational studies into contact with the life sciences, computer sciences, learning sciences, environmental sciences, cognitive sciences, and more. In taking up life as a framing problem for educational inquiry in the 21st century, biosocial research invites new forms of theoretical and empirical experimentation with such diverse practices as mass spectrometry, neural imaging, biosensing, digital modelling, and artificial intelligence in conjunction with critical posthumanist modes of social inquiry. The figures of “environment” and “milieu” have emerged as central concerns in such work, given the dynamic conditioning effects of external environmental forces on distributed learning processes and biosocial interactions (de Freitas, 2018). Biosocial research thus opens up a new field of possibilities for environmental education researchers whose work addresses the “environmentality” of learning as embedded within biological, social, technical, and ecological milieus.

Milieu as Method

In reckoning with the changing material conditions of life in the Anthropocene, this paper works to develop the concept of the “parental milieu” as a theoretical figure for biosocial research in environmental education. Our focus in this paper is primarily theoretical, and directed towards the development of the parental milieu as a concept that co-implicates the biological, social, technological, and ecological elements of the parental lifeworld. In crafting this notion of the parental milieu we necessarily move beyond the bounded limits of the human(ist) subject, as we acknowledge the ways that parenthood involves complex interconnections between humans and other animals, technologies, and environmental systems. Our project therefore intersects with Puig de la Bellacasa’s (2017) speculative inquiry into a more-than-human ethics of care, as well as Haraway’s (2016) project of “making kin” with nonhuman animals and technologies.

While our approach is unavoidably distorted by our own experiences as parents and environmental education researchers, we resist the temptation to draw on personal anecdotes, autobiographical narratives, and empirical data from our various projects. Instead, we adopt a speculative philosophy of inquiry that employs the concept of “parental milieu” as a method for exploring the problematic nature of parenthood in the Anthropocene. Drawing on the notion of “concept as method” offered by Lenz Taguchi and St Pierre (2017), we begin by assembling a three-part cartography of the concept of “milieu” which draws together insights from 20th century biology and continental philosophy. The word *milieu* is French and derives from the root words *mi* (mid) + *lieu* (place). The conventional usage of the term in English is concisely defined by the Oxford English Dictionary (2018) as “a person's social environment”, while the Cambridge English Dictionary (2018) expands this definition to include “the people, physical, and social conditions and events that provide the environment in which someone acts or lives”. In each case, the word “milieu” is tied exclusively to the status of “a person” or “a someone” who implicitly takes the form of a human subject. The milieu, in this conventional sense, is the set of conditions which surround the human “person” and provide an external environment that influences how that person thinks, acts, and lives in the world. This understanding of the milieu is limited because it disconnects the human creature from its biosocial connections with other forms of life, while simultaneously casting the external environment as an undifferentiated backdrop, container, or support for human flourishing.

Yet a considerably more expansive and nuanced understanding of the milieu can be found by mapping the concept's usages in biology and continental philosophy over the course of the 20th century. In the following three sections, we map the movement of the concept of milieu through von Uexkull's (1934/1992) notion of the "Umwelt" or "lifeworld" of the living organism; Simondon's (1958/2017) concept of the "associated milieu" of the technical object; and Deleuze and Guattari's (1968/1987) use of milieu as both "middle" and "medium" for the rhythmic transitions and variations of life processes in connection with Earth and territory. Each of these cartographic accounts contributes a different inflection to our development and understanding of the parental milieu, which strives to move beyond limiting notions of parental influence, control, and intermediation of cultural norms and expectations.

1934: The Milieu of the Living Organism

Our cartography of the milieu begins with the work of the German ethologist and biologist Jakob von Uexkull (1934/1992), whose book *A Stroll Through the Worlds of Animals and Men* introduces the concept of the "Umwelt" as the lifeworld of the living organism. von Uexkull begins his description of the Umwelt by comparing it to a soap bubble that surrounds each living creature, a bubble that is "filled with the perceptions which it alone knows" (p. 319). These bubble worlds are invisible and yet real in a literal, biological sense. If we could somehow peer into these lifeworlds we would discover "the world as it appears to the animals themselves, not as it appears to us" (p. 319). In proposing that all living organisms inhabit a milieu of intensive experience that is unique to their individual existence, von Uexkull argues that all animals should be regarded as "*subjects* whose essential activity consists of perceiving and acting" (p. 320, emphasis added).

The Umwelt or milieu of the living organism is associated with its capacities to *compose* a lifeworld within a sensory ecology that it co-inhabits with other creatures. Using the unassuming example of the tick, von Uexkull demonstrates how living organisms compose these milieus through relational modes and cycles of perceptual activity and behavioural response. The tick lacks any sense of vision or taste, relying solely on smell and photosensitivity to identify a series of three sensory-motor stimuli, or "receptor signs", which emanate from the bodies of warm-blooded mammals who serve as her parasitic host.

Out of the vast world which surrounds the tick, three stimuli shine forth from the dark like beacons, and serve as guides that lead her [sic] unerringly to her [sic] goal ... The whole rich world around the tick shrinks and changes into a scanty framework consisting, in essence, of three receptor cues and three effector cues – her *Umwelt*. (1934/1992, p. 325, emphasis in original).

The Umwelt is generated by the perceptual and behavioural activities of a living organism as it contracts an individual lifeworld from the total environment that surrounds it. For von Uexkull, this means that space and time are relative to the Umwelt as it constitutes the "living present" of the organism, along with the operability and directionality of its constructive functioning. For instance, a tick can subsist without food for up to 18 years by shutting down its nervous system and waiting in a "sleepless state". The "length of a moment" is thus qualitatively different for a tick than it is for a human. The lived durations of space and time can also vary significantly within the milieu of the individual organism, depending on the situations and encounters that certain ticks (or certain humans) experience over their life

times (1934/1992, p. 326). von Uexkull thus argues that living organisms occupy differing spatio-temporal systems in relation to the fluctuations of their milieus in the living present, making space and time relative to bodily perception and sensory-motor activity (see also Protevi, 2013).

However, the relativity of space and time to the body does not mean that the milieu of each organism is somehow discrete or phenomenologically “closed” to those of other organisms. As the example of the tick and its warm-blooded host demonstrates, organisms are in constant sensory connection and communication with one another through the perceptual and behavioural cues expressed through, between, and amongst their interpenetrating milieus. The milieu of the organism takes shape within a biosocial web of interactions that is composed through affective relations between organisms within a shared environmental manifold. “As the spider spins its threads,” von Uexkull writes, “every subject spins his relations to certain characters of things around him, and weaves them into a firm web which carries his existence” (1934/1992, p. 327). The Umwelt can thus be understood as a biosocial milieu of sensibility, attunement and response that is continuously being recomposed by the living organism in relation to the milieus of other creatures.

von Uexkull’s (1934/1992) understanding of the milieu as the “web of relations” that sustains the existence of a living organism is what he terms a “biological” understanding, which takes both organism and environment into account as a dynamic, biosocial assemblage. This means that nonhuman animals are accorded the capacity to signify and produce meaning through their behaviour, and the interpenetrating compositions of their milieus. The Umwelt is thus a meaningful and symbolic world, in addition to being a biological and social world that the animal inhabits. von Uexkull contrasts this biological perspective with that of the “physiologist”, for whom “every living creature is an object that lives in his human world” (p. 322). The figure of the physiologist occupies a scientific position that reduces life to a causal mechanics interrupted only by a series of accidental and capricious mutations. In refusing the reduction of life to physico-chemical mechanisms, von Uexkull proposed a “new biology” which came to impact significantly on the development of continental philosophy in the 20th century, including the works of Merleau-Ponty, Heidegger, Lacan, Foucault, and Deleuze (Buchanan, 2008).

1958: The Associated Milieu of the Technical Individual

While von Uexkull’s biosocial account of the Umwelt grants a vital subjectivity to the environmental worlds of living organisms, it does not fully translate to the technology-mediated milieus of life in the 21st century. Where he does refer to technical objects such as microphones, binoculars, and automobiles, he classifies them as “perceptual tools” and “effector tools” that are defined by their use-value for humans, and thus “only implement our acts [and] effect our purposes” (1934/1992, p. 319). For von Uexkull, the machine cannot be compared to a living organism because the machine is a “mere object”, and thus does not have a milieu in his biological sense of the term. In order to move beyond this impasse in our cartography of the milieu we turn to the work of Gilbert Simondon (1958/2017), a French philosopher who significantly influenced the development of poststructuralist theory in the second half of the 20th century, and served as a primary influence on the philosophical works of Deleuze and Guattari.

In many ways Simondon takes an opposing approach to the milieu from von Uexkull. He argues that the consideration of technological machines as “mere utensils” inhibits our ability to understand the relationships between “technical realities” and the biosocial realities of human and nonhuman organisms (1958/2017, pp. 20-21). This bifurcation between technology and organic life is problematic for Simondon because it “masks a reality rich in human efforts and natural forces” (p. 15), and renders the machine absent “from the world of significations...values, and concepts that make up culture” (p. 16). Rather than beginning with the living organism as the unit of analysis, Simondon (1958/2017) begins by analysing the operational realities and geneses of technical objects over time, including the workings of various types of engines, vehicles, and electronic devices. Where von Uexkull uses the world of the tick to illustrate his theory of the Umwelt, Simondon uses the traction motor of an electric train as a pivotal example of what he calls the “associated milieu” of the technical individual. A traction motor is the physical mechanism that pulls a train along the track, adjusting its workload in relation to the contours, resistances, and elevations of the terrain. As such, the traction motor is “situated at the meeting point between two milieus”: the “technical milieu” of its internal, machinic operationality and the “geographical milieu” of its surrounding environment (p. 55). As Simondon explains:

The traction motor not only transforms electrical energy into mechanical energy: it applies it to a varied geographical world, which translates technically into the shape of the tracks, the variable resistance of the wind, the resistance of snow that the front of the locomotive pushes out of the way... *The two worlds act upon each other* via the traction motor. (pp. 55-56, emphasis in original).

The traction motor occupies a “mixed milieu” that incorporates a technical milieu of interiority with a geographical, or “natural”, milieu of exteriority (p. 58). It is through this mixed milieu that the traction motor comes into being as what Simondon calls a “technical individual”. Simondon terms this mixed milieu the “associated milieu” of the technical individual. By mediating the relations between interior and exterior realities, the associated milieu is a field that the technical individual “creates around itself and that conditions it, just as it is conditioned by it” (p. 59).

Even though they come at the problem from opposing angles, we can see that there is a certain resonance between von Uexkull’s notion of the Umwelt and Simondon’s notion of the associated milieu of the technical individual. Indeed, Simondon (2017) goes on to argue that “the unity of the technical object’s associated milieu is analogous to the unity of the living being” (p. 60). Both living organisms and the technical objects they invent have associated milieus that condition and modulate their operational functioning and modes of existence in relation to a “total” environmental outside. Yet Simondon takes this analogy a step further when he describes the associated milieu as the ground or “common reservoir” of *virtual potentials* through which a living organism composes a unique system of physical and mental structures. Simondon describes the ways that “living matter is the ground for the organs; it is what allows them to relate to each other and become an organism; the organs participate in the body” (p. 62). Similarly, living matter forms the ground for thought, without which “there would be no thinking being, but rather an unrelated series of discontinuous representations”. The body’s associated milieu of virtual potentials is not infinite or indeterminate, but “homeostatic” in its capacity to direct the participation of the myriad

organs and mental elements of the living organism within a unified process of individuation. The homeostatic equilibrium of the associated milieu is described by Simondon as a “recurrent causality” between the interior and exterior worlds of the individual. In other words, both the living organism and the technical object are individuated through the associated milieu as a field of virtual potentials. This capacity for individuation as a self-conditioning process of actualisation is regulated by what Simondon calls the “technicity” of elements that make up the individual. Rather than proposing an individual subject that composes its own milieu, Simondon proposes a “super saturated” milieu from which an individual subject is crystallised, like salt being precipitated from a solution (Shaviro, 2009, p. 21).

Hence, in the case of the human individual, the associated milieu is the “middle term between life and conscious thought, just as the associated milieu of the technical object is the middle term between natural world and the fabricated structures of the technical object” (Simondon, 2017, p. 62). For Simondon, the reason for this analogic complicity between the human and the technical object is explained by the proposition that technical objects are “produced through the play of recurrent causality between life and thought in man” (p. 62). In other words, there are elements of human life and thought in the technologies that humans create, and by extending the concept of milieu to these technologies we encounter a profound series of interconnections between human biology, culture, and technics.

1968: Milieu, Rhythm, Territory, Earth

The French philosophers Gilles Deleuze and Felix Guattari draw on the work of both von Uexkull and Simondon in their conceptualisation of the milieu in *A Thousand Plateaus* (1987), which was originally published in French in 1968. This book has been particularly influential on the development of posthumanist and new materialist approaches to environmental education over the last decade (Payne, 2016), as well as on the “ontological turn” in the social sciences more broadly (Lather & St Pierre, 2013). Deleuze and Guattari approach the notion of milieu through what might be called a “geophilosophical imaginary”, which connects the lifeworld of the living organism with dynamic processes of territorialisation and deterritorialisation in relation to the chaotic milieu of the Earth itself. Territorialisation refers to the expressive process of marking out the conceptual, social and physical architectures that afford places for Earthly co-habitation, along with the associated capture and organisation of biological, social, technological, and environmental processes (Deleuze & Guattari, 1987, p. 311). Alternatively, deterritorialisation refers to the dissolution or abandonment of existing territories in order to form new assemblages through the ongoing variation of thought, movement, articulation, and other modes of co-habitation. Where territorialisation harnesses negentropic tendencies for milieus to move toward order, organisation, codification, structure, stability, habit and finitude, deterritorialisation releases entropic tendencies for milieus to move towards chaos, disorder, variation, release, mobility, and infinitude. These differential forces function in iterative cycles, such that each territorialisation establishes the conditions for possible deterritorialisations, which in turn establish the potentials for reterritorialization under an altered set of ontological conditions or “multiplicities”.

What is of particular interest to us in the context of this paper is the way that Deleuze and Guattari (1987) locate the milieus of the individual organism in relation to a massively distributed system of geologic and environmental processes:

The living thing has an exterior milieu of materials, an interior milieu of composing elements and composed substances, an intermediary milieu of membranes and limits, and an annexed milieu of energy sources and actions-perceptions. (p. 313)

Significantly, they write that these milieus precede the composition of territories and indeed of the organism itself, to the extent that the organism is composed through a unified organisation of more distributed geo-bio-chemical forces and Earthly processes. They further describe milieus as “vibratory” and “rhythmic”, akin to Simondon’s description of the “recurrent causality” which enables the homeostatic regulation of the organism’s physical and mental states. For Deleuze and Guattari, the milieu is produced by the repetition of an elemental component which staves off the entropic chaos of an absolutely deterritorialized Earth. “The milieus are open to chaos, which threatens them with exhaustion or intrusion. Rhythm is the milieu’s answer to chaos” (p. 313). Rhythm is produced and communicated through the relations between milieus, a process of transduction and transcoding of information that occurs in the mixed milieus between, for example, the ocean and the shore; a train’s motor and its undulating terrain; the human body and a flight of stairs. It is no longer a question of how one milieu discretely influences the other, but rather of how milieus co-compose and interpenetrate one another, at varying scales and temporalities of co-existence.

Deleuze and Guattari (1987) explicitly cite the work of von Uexküll in their conception of milieus in relation to rhythms, as well as motifs and refrains that pass between the milieus of different organisms, species, and environments. Biosemiotic information is transduced and transcoded between milieus in ways that are, more or less, harmonious: “Nature as music” (p. 314). However, Deleuze and Guattari radically reconceptualise von Uexküll’s notion of the Umwelt by bursting the bubble of the phenomenological lifeworld of the organism, which becomes for them a kind of subjective trap or prison. Instead, they suggest that milieus are constantly being composed, decomposed, and recomposed through the creative production of territorial assemblages.

This distinction between milieu and territory is emphasised in Deleuze and Guattari’s (1987) account, and it is important not to confuse or conflate these two terms if we are to understand their complex relationships:

The territory is in fact an act that affects milieus and rhythms, that “territorializes” them. The territory is the product of a territorialization of milieus and rhythms. A territory ... is built from aspects or portions of milieus. It itself has an exterior milieu, an interior milieu, an intermediary milieu, and an annexed milieu. It has the interior zone of a residence or shelter, the exterior zone of its domain, more or less retractable limits or membranes, intermediary or even neutralized zones, and energy reserves or annexes. (p. 314)

For Deleuze and Guattari, territory is not (yet) understood as a “place”, but rather as a series of compositional actions that organises milieus and rhythms in ways that are expressive. Through the process of territorialisation, the functional and directional properties of milieus become “dimensional” and “qualitative” (p. 315). They become “matters of expression” which mark out the dimensions of a living domain or abode. This process is exemplified in the

expressive colours and movement patterns of fish, or the way that a “brown stagemaker (*Scenopoeetes dentirostris*) lays down landmarks each morning by dropping leaves it picks from its tree, and then turning them upside down so the paler underside stands out against the dirt” (p. 315). There is a profound sense of artfulness that accompanies this understanding of animal territory, such that the process of territorialisation becomes analogous to the process of making a work of art (p. 316). Both processes involve the organisation of rhythms and milieus into qualitative matters of expression which mark out, frame, and arrange a certain region or “block” of spacetime from the chaos of the Earth (the milieu of all milieus). This understanding of art and territory as the creative organisation of Earthly milieus brings human life and experience into profound relationship with the lives of other animals, and indeed, the technological objects that have come to populate life in the 21st century.

In thinking through Deleuze and Guattari’s concepts, we can begin to imagine the contours of the domestic household as a territorialised organisation of milieus that express the biological, social, and environmental realities of having a home. We can also imagine the ways that this domestic territory is co-inhabited by a familial collection of individual living organisms (both human and nonhuman), each with their own internal, external, intermediary, and annexed milieus. In addition, and by drawing on Simondon, we can envisage the associated milieus of various technical objects that (more or less) intersect and form relationships with the living inhabitants of the territory: televisions, clocks, mobile phones, computers, cars, dishwashers, laundry machines, microwaves, and more. For the purposes of this paper, this distinction between the milieus of living organisms, technical objects, and household territories helps us to distinguish what we term the “parental milieu” as a nuanced and specialised concept. We now turn to a brief discussion of the parental milieu as a conceptual figure that connects with other milieus within the household and surrounding regions.

Four Propositions for the Parental Milieu

Our approach to assembling the concept of the parental milieu is necessarily speculative, building as it does on theories of organic, technological, and territorial milieus discussed above. While this concept has received surprisingly little attention in education and the social sciences more broadly, it is not without precedent. Merleau-Ponty (2010) refers briefly to a “parental milieu” in his Sorbonne Lectures (1949-1952) on *Childhood Psychology and Pedagogy*, where he writes that “the parental relation is the vehicle of all relations in the world; the social relations manifest themselves at the interior of these relations” (p. 302). Merleau-Ponty describes the parental milieu as a social role or figure of parenthood which has a mediating effect on the transmission of cultural norms and bodily techniques. He gives the example of the “complete body technique” that is produced by a culture that uses chairs, arguing that “fatigue and exhaustion do not have the same meaning in societies where chairs are unknown” (p. 302). In this case, the parental milieu functions as an intermediary in the inscription of chair-sitting as the cultural transmission of body techniques to the child. While we lack the space here to unpack the details of Merleau-Ponty’s description of the parental milieu, his example of the chair can stand in for what we might characterise as a normative understanding of the concept. This normative understanding aligns with widely accepted psychological and sociological models, such as the Freudian model in which the parent’s behaviour is unconsciously imprinted on the child, or the Hegelian/Marxist model in which social roles, hierarchies, and norms are transmitted through the parent as “intermediary”. Drawing on the ideas of von Uexkull, Simondon, and Deleuze and Guattari cited above, we

would like to propose four ways of thinking the parental milieu in critical posthumanist terms that exceed the psycho-social transmission of cultural norms, identities, ideologies, and habits.

I. The milieu of the animal

First, we would like to suggest that the parental milieu of the human is connected (more or less) to the milieus of all other living organisms, as well as the milieus of the Earth's planetary systems. There is a sense of rhythmic operationality to the parental milieu that is shared across animal species, and which also connects us (as parents) to the animals that we are. The parental milieu is intimately linked to the rhythmic repetition of everyday "matters of care" associated with food provision and preparation, bathing, dressing, cleaning, reading, and other modes of engaging with the child within the territory of the home and its extensions into the wider biosocial community (Puig de la Bellocasa, 2017). These matters of care connect with the shared "elemental" milieus of all living organisms, including the milieus of hunger, thirst, health, shelter, mobility, growth, development, sociality, and learning. They also connect to the geological milieus of the planet at large, including the elemental milieus of climate, water, soil, rock, electricity, and radiation. Parental caretaking practices become what Weinstein and Colebrook (2016, p. 5) call "inhuman rites", as rituals that connect the parental milieu with inhuman agencies and forces.

We would also characterize parental milieus as key components of territory formation, insofar as the milieus of parent, child, society, and environment are organized into assemblages that produce the feeling of "home". In many ways, these practices of care make the parental milieu the primary agent or pivot point for the assemblage of a household, including the metabolizing of energy, food, waste, affect, information, and knowledge as it passes in and out of the home. From this perspective, we would see the removal, weakening, or dissolution of the parental milieu as having a deterritorialising effect on the home as a territorial assemblage. For instance, a household assemblage is likely to fall apart if there is no parental milieu to modulate its organization and functioning. Similarly, the external milieus of environmental, geopolitical, or economic catastrophes (such as climate change, war, or economic collapse) would have a deterritorialising effect on the home, and these factors could variously weaken or strengthen the capacity for the parental milieu to "make home" otherwise or elsewhere.

II. The milieu of technology

Second, we would like to suggest that the parental milieu is connected with the milieus of technical objects and media networks that have become ubiquitous components of 21st century life in many parts of the world. We are now surrounded by technologies capable of sensing, processing, and responding to information at speeds and quantities that equal, and in some cases exceed, animal (e.g. human) cognition. These include biological and environmental sensing networks, machine learning algorithms, wireless communication platforms, and computational devices that are rapidly transforming the scope and complexity of the parental milieu. There is simply no precedent for this phenomenon, as the current generation of children (particularly in minority Western cultures) are the first to live their entire lives immersed in mobile wireless internet, social media, and continuous access to real-time digital information through smartphone devices.

It is in this sense that technology has reached a stage in which media has literally become “environmental” (Hansen, 2015), and thus of vital concern to our understanding of the parental milieu in the 21st century. On the one hand, we can see the ways that the parental milieu takes on an increased regulatory role with respect to a world of digital information that is available anytime and anywhere. The environmental purview and response-ability of the parental milieu is substantially increased to include the ways that vast virtual landscapes, social collectives, and data architectures are accessed, consumed, and operationalised within the home. This response-ability also extends to household environment impacts, as the ability to digitally sense, track, regulate, and modify coefficients of household energy and food consumption becomes increasingly accessible to parents. On the other hand, we would argue that the parental milieu has itself become the target of massively distributed data mining and analysis algorithms associated with social media and personalised online advertising (de Freitas, 2018; Gulson & Webb, 2018). Inasmuch as parent’s territorialising practices have extended to the “home pages” of social media platforms such as Facebook and Instagram, the parental milieu is being targeted for its valuable sources of behavioural biodata for the purposes of personalised online marketing. We therefore argue that the empowering and disempowering effects of 21st media networks should be considered ubiquitous and impactful elements of the environments that today’s parental milieus inhabit and operate within.

III. The milieu of consumption

Third, and intractably connected to the milieus of animals and technology, the parental milieu is habitually in a mode of transaction or consumption together with a regeneration and repopulation of the human species. Overconsumption and overpopulation are in and of themselves the crux of the Anthropocene. There is no other living species on Earth that is outpacing its own carrying capacity. Scientists predict that a human population of 9-10 billion is the upper limit which is expected to be reached by 2100 (Wilson, 1992). With the removal of China’s “one-child policy” and population incentives like the Australian baby bonus, there is no indication that the upper limit of 9-10 billion will level off. In what ways does the parental milieu fuel, mitigate, constrain, control, sustain, and transform domestic patterns of everyday consumption? It is possible that today’s parental milieus are largely captured by what Hillcoat and Rensburg (1998) phrased as “empty-shelf” thinking, or what Morton (2016, p. 69) has termed an “agri-logistic” mentality. For Morton, neo-Liberal claims to scientific rationality and universal reason are linked to algorithmic patterns of consumption that are largely subconscious, “and therefore liable to be repeated and prolonged like a zombie stumbling forward” (58). As a subconscious algorithmic program that infects the parental milieu, agri-logistics makes the mass killing and consumption of animals both a habituated and a logical necessity for the domestic household. Yet the logic of such a program fails disastrously under the conditions of the Anthropocene, when the over-consumption of animals is a primary factor in the production of greenhouse gases, soil degradation, water depletion, and the relentless destruction of oxygen-producing vegetation (McNeill & Engelke 2014).

We also recognise that the parental milieu of consumption is being manipulated by advertising campaigns that specifically target the milieus of children. The parental milieu is continuously being bombarded with advertisements through marketing campaigns driven by data profiles harvested from social media accounts, machine learning algorithms, and biometrics. Children’s characters from popular media are printed on products to capture the

parental milieu through the milieu of the child, with little consideration for health or environmental implications. Under these conditions of ubiquitous solicitation, how does the parental milieu enable or disrupt the targeted manipulation of family consumption patterns?¹

IV. The trans-qualitative milieu

Fourth, we would like to propose a concept of the parental milieu that is fluid, inclusive, and “trans-qualitative” in its openness to difference and transformation. In addition to being an intermediary for the manipulation of sociocultural patterns, habits and norms, we see the parental milieu as a field of virtual potentials and creative actualisations that are continuously producing new assemblages of “family”, “culture”, and “home”. This means that the parental milieu is not tied to fixed or normative classifications of identity, gender, sexuality, race, ethnicity, or social role. Crucial to this concept is the inclusion of parental milieus that might variously self-identify as lesbian, gay, intersex, transgender, bisexual, cis-gender, or of unspecified gender. Additionally, this concept of the parental milieu is not tied to any essentialised, biological definition of parenthood, and as such, would include modes of adoption, artificial insemination, surrogacy and abortion as permutations of the parental milieu as a creative process. This is to acknowledge the fluidity, permeability, and virtuality of the biological as “living matter”, or *zoe*, that is connected to thought, culture, and the social, rather than being a closed mechanistic system of bio-chemical processes (Braidotti, 2013).

It is therefore interesting to consider how the parental milieu exists for those who are not parents in any reductive “biological” sense, and whether this stretches the concept beyond its critical utility. Would the relationship between a homeless person and the dog s/he sleeps with every night constitute a parental milieu? Can the parental milieu engender a bioethics of care for life, of devotion and loyalty to other creatures, of service and commitment to the world’s contingencies? Perhaps a couple embodies the parental milieu in their very decision *not* to have children, and maybe they find the expression of this milieu through “queer” kinships with other children, animals, technologies, environments, and practices (Haraway, 2016). From an ecological perspective, the choice not to have children may be one of the most ethical expressions of the parental milieu available to humans today. We deliberately leave these problematic questions unanswered in order to keep the concept of the parental milieu open to further trans-qualitative movements and potentials.

Conclusion: Environmental Health and New Constellations of Value

In this paper we have drawn on three 20th century thinkers of the milieu in order to conceptualise the parental milieu as a theoretical tool for biosocial research in environmental education, and the emerging field of critical life studies. In doing so, we have appealed not to personal identity, social role, or the lived experience of the parent, but to the ongoing creation of a biological, social, technical, and environmental milieu that is parental in nature. We have taken a speculative approach in order to allow the concept of parental milieus to

¹ We recognise the pressing need for further research in this area. We are currently preparing a follow-up paper that draws on empirical research investigating the role of the parental milieu in modulating the effects of advertising in relation to patterns of consumption within the domestic household.

breathe and take shape without needing to be applied or accountable to the vagaries of a specific research project and associated data. We have used the concept of milieu as a method (Lenz Taguchi & St Pierre, 2017), and we have followed its speculative movements rather than bending the concept to an external research protocol, or aligning it with anecdotal “evidence” from our own personal experiences as parents.

In conclusion, we would like to suggest several ways that this biosocial conceptualisation of milieu might be taken up in the intersections between critical life studies and environmental education. We see significant potentials for environmental educators and researchers to engage with the “new synthesis” of biological sciences, arts, ethics, and politics that is currently emerging in response to the Anthropocene (Haraway, 2016). By re-orientating environmental education towards critical and creative engagements with the contemporary life sciences, the concept of milieu can open up new possibilities for research that takes ecological relationality as both a condition and a proposition for life. Recent epigenetic research, for instance, suggests that the places we co-inhabit with other creatures are biologically and socially coded into our bodies at cellular, molecular, and genetic levels (Meloni, 2016). This makes the “environmental health” (Jeremijenko, 2016) of places such as homes, schools, parks, and workplaces of vital concern for both parents and environmental educators. Future research might begin to investigate the environmental health of the home by moving beyond reductive behavioural “measures” offered by conventional sustainability indices. New indicators of environmental health in the home might include sensory and affective qualities of living spaces; creative capacities for technical, architectural, and artful invention; modulation of environmental rhythms and elemental variations; attention to ethical concerns and matters of care within local, regional, and global infrastructures; responsiveness to rapidly changing climatic conditions; regulation of flows of biodata within ubiquitous digital networks; trans-qualitative relations between cultures and species; and the nutritive and metabolic effects of food, air, soil, and water quality on both macro- and microbiomes. Such indicators take seriously the proposition that social, imaginative, aesthetic, geologic, ecological, technical, political, molecular, and metabolic processes are intricately connected within the interpenetrating milieus of the 21st century household.

More specifically, we suggest that transgenerational research is needed into the relationships between parental milieus and children’s environmental learning experiences and ethico-aesthetic sensibilities within the home. Several researchers have begun this work through critical and creative studies undertaken in collaboration with their own children (Knight, 2016; Trafi-Prats, 2018), an approach which may prove promising given the difficulty of researching the private worlds of families. We recognise a need to explore ways that parental milieus might come to generate new *constellations of value* that connect human households with nonhuman forms of animal and vegetal life, with technologies, and with the dynamic changes occurring within the Earth’s climate and weather systems. What does it mean to be a parent in an age of climate change, a time when the Earth can no longer support our population? What can we learn from the parental milieus of nonhuman animals? How do ubiquitous media technologies expand or contract the parental milieu, and attendant response-abilities? How does our understanding of parenthood change in a postgenomic age, when cloning and genetic modification are ready at hand? These are questions that we hope parents might begin to ask of themselves and their children, as the parental milieu becomes increasingly

entangled with the milieus of other animals, technologies, and the Earth's environmental processes.

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