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DIFFRACTING THE CURRICULUM: PUTTING “NEW” MATERIAL FEMINISM TO WORK TO RECONFIGURE KNOWLEDGE- MAKING PRACTICES IN UNDERGRADUATE HIGHER EDUCATION

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ABSTRACT

This chapter puts “new” material feminist theory to work to re-think curriculum practices in undergraduate higher education. Drawing on the work of Karen Barad and her elaboration of agential realism, the chapter explores the following questions: how can thinking with new material feminism help develop and support new modes of curriculum design? How does new material feminism facilitate the development of innovative teaching and learning practices? And how does new material feminism expand the means by which knowledge is produced? The chapter utilizes Barad’s notion of diffraction to illuminate how curriculum-making can be done via a patterned activity of creative interference. Empirically grounded in a module on an undergraduate BA Education Studies degree, the discussion employs practical examples of how new material feminist thinking and doing activates different ways of thinking about the body, materiality, affect, space, places, and objects in the undergraduate curriculum. More broadly, the chapter speaks into long-standing concerns about how feminist theory might support innovative teaching and learning, and how it might promote new modes of relation between

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our students and us as educationalists. The chapter is written from the point of view of the tutor's reflexive insights on the module as a novel curriculum instantiation of material feminist practice.

Keywords: Curriculum; knowledge; learning and teaching; Karen Barad; diffraction; new material feminism

INTRODUCTION

Recent years have seen the emergence of the “new materialisms” across the arts, humanities, and social sciences. New materialisms are situated within posthumanist and post-anthropocentric perspectives, which shift attention away from humans as the central focus, and toward a theoretical and practical engagement with matter. New material feminism is situated within the variegated and heterogeneous field of new materialisms, and Karen Barad’s elaboration of agential realism is central to both. In her book, *Meeting the Universe Halfway* (2007), Barad introduced a way of thinking about the relations between matter and discourse, and a range of concepts to understand those relations (or, as she would say, their *entanglement*), that has been incredibly generative for feminist educationalists across the sectors and in a range of national contexts (Hinton & Treusch, 2015; Lenz Taguchi, 2010; Taylor & Iverson, 2013).

However, as yet – apart from a handful of studies (Danvers, 2018; Gourlay, 2015; Quinn, 2013) – little use has been made of Barad’s agential realism or new material feminism in studies of UK higher education curricula. This chapter makes a move in that direction. Its empirical focus is an undergraduate module, *Educational Spaces: Theories and Perspectives*, on a BA Education Studies degree in a UK university. Its theoretical grounding is Barad’s agential realism which it deploys to illuminate how designing and enacting curriculum as a creative, open-ended, material practice provides a means to give students greater voice in curriculum design; opens up higher education to innovative learning, teaching and assessment practices; and engages students in new ways of producing knowledge. The chapter utilizes Barad’s notion of diffraction – that is, an attention to how “different differences get made, what gets excluded, and how these exclusions matter” (Barad, 2007, pp. 29–30) – to illuminate how curriculum-making can be done via activities of creative interference. The chapter illuminates the usefulness of new material feminism in showing the importance of situated particularities in students’ experiences of the higher education curriculum.

The chapter begins with an introduction to new material feminism as a theoretical framing for the subsequent discussion. It then outlines the key concepts in Barad’s agential realism. The undergraduate module which is used as an exemplar in this chapter is then introduced. The next three sections put Barad’s concepts to work through three “diffractions,” which taken together, indicate how new material feminism can be used to rework the design, learning and teaching, and knowledge production within the module under question. The conclusion

then draws some key points together to evaluate the usefulness of new material feminist theory in providing new understanding of the higher education curriculum, and to prompt considerations of curricula not simply as a human affair but as an ethical materialization of human and non-human agencies. The chapter points to how new material feminism may help us speak back to the discourses of commoditization and individualization which mark (and, some say, deform) the current higher education landscape.

NEW MATERIAL FEMINISM: A NEW STARTING PLACE FOR UNDERSTANDING HIGHER EDUCATION CURRICULUM PRACTICES

The starting point for the chapter's discussion of the materiality of curriculum is the commitment, shared by all forms of new materialism, to thinking of matter as "lively" (Alaimo & Hekman, 2008; Bennett, 2010; Coole & Frost, 2010). Barad's (2007, p. 3) central insight is that "matter and meaning are not separate entities," a point which neatly encapsulates what is "new" about new materialism. New material feminisms shift the emphasis away from the human as the "centre," "source" and hierarchical "top of the tree" in terms of knowledge-making, and instead, propose that all manner of bodies, objects and things have agency within a confederation of meaning-making. New materialists of all stripes accept that matter is alive and are all seeking ways to take the "work" that matter does more seriously. It is the acceptance that human and non-human bodies are entangled and co-constitutive equal partners in knowledge-making that makes new materialism so potentially important for curriculum studies in higher education. It is also this acceptance which distinguishes new materialism from previous cultural "turns."

So, for example and in brief, new material feminism is different from Marxist materialism because it does not see human consciousness as an ideological reflection of a prior economic form of organization (capitalism) (Taylor & Ivinson, 2013). It is different from post-structuralism which has had a tendency to privilege language over materiality (Derrida, 1974). It is also different from postmodernism in that it does not make a clear distinction between "big stories" – in Lyotard's (1984) sense of those metanarratives which have so far sustained human societies – and the "*petit recits*," or "little stories," which pay attention to the local, contextual and specific, and which are often generated in response to mainstream accounts which ignored them. New materialism counters Marxist materialism by displacing the human as focal point; it counters post-structuralism by thinking matter-discourse together; and it counters post-modernism by collapsing the binary between "big" and "little" modes of significance.

The next question is: what is feminist about new material feminism? New material feminism shares a social justice imperative with other modes of feminism. Like them, it is committed to finding ways to combat gender inequality, discrimination, and violence in education. More broadly, it shares with post-structuralism,

post-colonialism and intersectional studies a suspicion that the Enlightenment ideals of rationality, objectivity and scientific progress have only delivered partial benefits for particular groups of people (mostly males, White, Western, able-bodied people), and that the narrative of “progress” it offers is also a partial affair designed to maintain the hegemony of those dominant groups who largely benefit most from it. New material feminism, therefore, is grounded in a radical set of ideas which, when deployed as analytical and practical tools, are generative of new understandings of subjectivity, power, relationality and ethics which enable us to fundamentally rethink what we mean by – and how we do – social justice in a more-than-human world.

Education is central to this rethinking. The educative project of Western schooling and post-compulsory education is founded on an individualized, cognitivist, developmentalist narrative; it privileges ends over means; and seems ever more tied into the production of competitive forms of neoliberal credentialism. New material feminism engages critically with this often rather reductivist narrative in order to find new ways of doing the work of social justice. In its focus on curriculum, this chapter explores how new material feminism might work to accomplish feminist ends which (in small but important ways) undermine institutional ways of working that maintain gender inequalities.

Curriculum-making and the forms of knowledge and knowing that curricula inaugurate are, in today’s context, just as much a “politics of knowledge” as they were when [Young \(1971\)](#) and [Apple \(1979\)](#) were doing their groundbreaking work in the 1970s. Feminist understandings of the sociology of knowledge have long pointed out that knowledge is grounded in and oriented to a “politics of location,” and that knowledge is situated and contextual ([Haraway, 1988](#); [Harding, 1993](#)). This chapter builds on this feminist legacy to explore how new material feminism can take forward understandings of curriculum-making as a “politics of knowledge.” Central to this is the extent to which a new material feminist curriculum can reanimate the potentially transformative power of knowledge in undergraduate education ([Ashwin, 2014](#)) as a counter to input-output models of teaching and learning, which seem set to squash critical thinking, creativity, and innovation.

AGENTIAL REALISM

Barad’s work is situated at the meeting point of feminism, philosophy, and quantum physics. In particular, she draws on the philosophy-physics of Niels Bohr to develop what she calls a diffractive way of thinking. In physics, diffraction refers to interference patterns produced when light waves and matter such as particles encounter an object in their path. Barad uses diffraction as a feminist means to engage different resources from different disciplines and read their insights through each other, in order to produce patterns of interference. From this materialist basis in quantum physics, Barad has developed agential realism, a theory which, in her words, aims “to give matter its due as an active participant in the world’s becoming, in its ongoing intra-activity” ([Barad, 2007](#),

p. 136). Agential realism is theoretically complex and so here and in the curriculum analysis which are as follows. I focus on four of Barad's key concepts:

- (1) Entanglement. Barad figures the world and everything in it as a matter of entanglement, a notion (like diffraction) that she takes from quantum physics. Entanglement presupposes a material connectivity between objects, even those separated by large distances, such that an action performed on one affects the other. Entanglement leads Barad to argue that in nature there are no such things as "things"; this is because "things" presuppose separate "objects" with boundaries, and in her agential realist view, boundaries are a human invention – in reality everything is always-already connected.
- (2) Cut. In Barad's agential realism, cuts do two things. First, cuts produce boundaries and boundaries produce separation and work to keep those separations in place. But, because boundaries are a human invention, they are interlaced with power. Thus, in Barad's terms, any and all cuts we (humans) make are (usually) about instituting difference, creating binaries, and producing hierarchies. Western Enlightenment thinking provides many examples of cuts with which we will be familiar: nature/culture; man/woman; human/animal; civilisation/savage; reason/emotion. There are also the cuts inaugurated by scientific rationalism which have influenced how we think about and do research: subject/object, observer/observed, meaning-maker/data.

As an Enlightenment discourse *par exemple*, education is predicated on cuts: knower/known; discipline/disciple; teacher/learner. Cuts are about more than producing these "large" binaries; they also work at the "minor" scale. In agential realism, every decision we take, however small, makes a cut. For example, in teaching, decisions such as do I re-use last year's hand-out on learning theory or revise it for this year? Do I use a model, a concept or an experiential example to make a point about gender? Or, do I use Bourdieu or Foucault or Haraway to theorize a point about inequality?

However, the second thing that cuts do is entangle-together – they entangle "us" with the matter that is being produced. Barad (2007, p. 168) says, "subjects [are] intra-actively co-constituted through the material-discursive practices that they engage in," and by "subjects" she does not mean simply humans but all forms of agencies, including animals, non-human, more-than-human and other-than-human objects and things. This is why in agential realism, agency is not a human attribute. Agency is a doing, a being, a becoming in which "matter is an agentive factor." (Barad, 2007, p. 178). Cuts, then, inaugurate separation *and* entanglement in the ongoing practices which co-produce the world "in its iterative materialization" (Barad, 2007, p. 178). Cuts have important consequences in relation to agency and knowledge production.

- (3) Phenomena. Given Barad's view that cuts entangle as well as separate matter, it follows from this that "the primary ontological unit is not independent objects with inherent boundaries and properties but rather *phenomena* [which are] *the ontological inseparability/entanglement of intra-acting*

‘agencies’” (Barad, 2007, p. 139). Accordingly, in an agential realist account in which matter has agency, a fundamental reworking of ontology is required. Agency is re-thought as an “ongoing ebb and flow” (Barad, 2007, p. 140). Agency is not an attribute of a person, is not possessed by individuals as free will but is, rather, an ongoing becoming and reconfiguring of practices of mattering, in both senses of the word. Agential realism is about what/who comes to matter and how that mattering comes about. This means that an agential realist ontology is based in a flatter and more distributed set of material arrangements: a material confederation not a human-other set of hierarchies.

- (4) Intra-action. The fourth concept central to Barad’s lexicon is intra-action. Intra-action is fundamentally different to interaction. Interaction presupposes that things already exist as separate and separable entities prior to their coming together. Intra-action, in contrast, speaks of how matter and meaning come into being in the moment of their coming together – they emerge together as material-discursive phenomena within mutually co-constitutive apparatuses, which is why Barad speaks of “the mutual constitution of entangled agencies” (Barad, 2007, p. 33).

These four concepts are at the heart of Barad’s agential realism, which she proposes as a posthumanist performative account of the entanglement of things, bodies, spaces, objects, discourses and meanings, entanglements which fuse ontology and epistemology and presume an ethical basis in relationality and co-dependence. After providing a brief description of the undergraduate module on which the ensuing discussion is based, I then put these concepts to work via three diffractions of the higher education curriculum: curriculum design; learning and teaching; knowledge production.

EDUCATIONAL SPACES: THEORIES AND PERSPECTIVES

Students take this 12-week module in the first semester of their third and final year on the BA (Hons) Education Studies undergraduate degree. The module is described in the Module Handbook as follows:

This module explores theories and perspectives on educational spaces, and applies these in the analysis of historical and contemporary examples of educational spaces. The module analyses the physical, material, cultural, social, global and virtual spaces of education and learning. It considers the increasingly diverse nature of the spaces and places education and learning take place in; and explores how these spaces and places impact on, and potentially transform, learning, educational identities, and the meaning and value of education. Through the authoring and web-publication of an academic article the module enables students to make a contribution to the production of academic knowledge in an important, but as yet under-explored, area of educational analysis.

The module content enables students to engage with the “spatial turn” that has taken place across the social sciences in the last 10 years (Kalervo, Gulson, & Symes, 2007). It encourages students to explore individual and

collective spatial experiences of education: in formal institutional spaces, such as classrooms, lecture halls, seminars, tutorial rooms, learning centres, as well as in informal spaces and places outside educational institutions, such as at home, in study spaces carved out of bedroom and dining rooms, in personal study spaces, on the bus, in the street. Students are, thus, encouraged to think broadly about what is meant by an “educational space.” In addition, the module is designed to be interdisciplinary, drawing on theorizations of space and place from across the social science disciplines, including from human geography, material cultures studies, architecture, sociology and philosophy. Furthermore, educational space is one of my central research interests (Taylor, 2013, 2014), and I wanted to share my own insights into research and writing about space with the students I teach.

The module assessment requires students to write autoethnographic articles based on two critical incidents of their experiences of educational spaces during their learning careers. They use theories of space and place to frame and critique their experiences, participate in an anonymised class peer reviewing process on article drafts, work on peer review feedback to produce a final version of their articles, and publish their articles in the web-journal, edited by a student editorial team.

DIFFRACTING THE CURRICULUM 1: HOW CAN NEW MATERIAL FEMINISM HELP SUPPORT NEW MODES OF CURRICULUM DESIGN?

Since Tyler’s (1949) seminal work, the dominant model has seen curriculum design as a logical sequence of steps that provide a clear plan for learning in order to ensure the delivery of the aims that teachers and institutions wish students to achieve. Fraser and Bosanquet’s (2006) synthesis of curriculum conceptualizations offers a broader four-part typology, which sees curriculum as:

a: the structure and content of a unit (subject); b: the structure and content of a programme of study; c: the students’ experience of learning; d: a dynamic and interactive process of teaching and learning. (p. 272)

This typology moves some way beyond the traditional understanding of curriculum as content, syllabus and structure, to include students’ experiences of the curriculum. It recognizes that curricula don’t just get implemented but are made; and acknowledges that curriculum enactment is a nuanced, individual and communal activity. This latter view of curriculum brings it close to Pinar’s (1975) concept of “currere,” and resonates with sociology of knowledge (Young, 1971), feminist (Grumet & Stone, 2000) and postmodern (Doll, 1993) critiques. What remains central is the notion of curricula as normative constructions aimed at the reproduction of “legitimate” knowledge. What, then, can new material feminism bring that supplements these understanding and helps support alternative modes of curriculum design in higher education?

A Baradian agential realist answer to this question begins with the point that the “curriculum” doesn’t exist outside us. Instead, it starts with the notion that,

whatever the “curriculum” “is,” it comes into existence in the act of its materialization, in the activities and doings that constitute it. In this view, curriculum is a material-discursive practice of mattering that is both an embodied event and an ongoing happening. As a *material-discursive doing*, agential realism offers a way of transforming curriculum from an “object” that seems to exist “outside,” prior to, or somehow “beyond” us, into a creative and emergent intra-active process – one in which we (students alongside me) have a stake. Furthermore, thinking and doing curriculum as an entangled matter means contesting the idea that it is something into which we have to stuff content, as if the content were strangely dissociated from the process. To illuminate curriculum doing in a new materialist vein, I focus on one aspect of curriculum design of *Educational Spaces: Theories and Perspectives*.

The module emerges and is shaped as an “open” architecture for learning. There are 12 weekly sessions, three of which are given over to support with assessment and the remaining nine covering “content.” That each of these nine sessions is themed means that it doesn’t matter which order the themes are taught in. The “structure” of those 12 weeks is not decided in advance. In terms of “content,” prior to the first week, I, as lecturer, have already made a series of material cuts by uploading themed and grouped articles, chapters and readings (which I have chosen) about space and place into nine session blocks, and other articles about autoethnography as a research approach (also chosen by me), to the module’s virtual reality site (Blackboard), and invited students to have a quick look through them. In the first session, I consult with students about how to dispose these themed and grouped articles into a weekly structure for the module. Each year, students generate different strategies for this aspect of curriculum construction.

Usually, they choose to work in small groups to generate a series of analytical threads that draw a line through the proposed “content,” which they then as a whole class agree on. One year that didn’t work, agreement couldn’t be reached, and we resorted to pulling weeks from a hat and doing them in that order. It worked as well as any other way. From an agential realist perspective, what matters is that in “disposing” and arranging the themed sessions themselves (my role is as moderator and facilitator of the curriculum design process), it is the students who produce the “logic” of curriculum mattering out of their entanglement with the module materials. The arrangement of weeks is their particular “cut”; it is the students’ material intra-actions which enables “the” curriculum to emerge out of many possible curriculum paths.

Giving power to students regarding curriculum design in this way has produced all sorts of material matterings. First, materializing a linear curriculum “order” by arranging nine themes into a sequence of available sessions works as a powerful means of destabilizing the notion that curriculum is a somehow “natural” and “logical” progression through weekly “content” toward a higher end-point synthesis. Students’ engagement in producing “a” curriculum rather than being given “the” curriculum indicates to them that any curriculum is always an emergent process produced from decisions (cuts, in Barad’s terms) about mattering – of deciding what matters, which goes first, which order, and why.

Second, as a mode of productive disconcertion, students' engagement with materializing the curriculum entangles them within knowledge-making in profound ways. It pushes forward current notions of curriculum co-construction (Bovill, Cook-Sather, & Felten, 2011) in ways which create a pedagogic space for greater student participation than is the norm in most undergraduate degrees.

Third, it presents a very practical way of entangling students with the outcomes or consequences of their decisions. Students "live with" the curriculum they have helped materialize for 12 weeks, during which time they experience how their cuts are productive of matter and meaning via the texts they entangle with and the learning opportunities they generate and, in addition, how those cuts entail matters of responsibility and accountability – to themselves and to each other – to make this collective design "work." The curriculum the students design emerges as a material-discursive phenomena of entangled agencies, to use Barad's concept, but also brings to the fore how ontological, epistemological and ethical dimensions are also entangled within acts of curriculum making. In addition to opening up a real and embodied sense of the curriculum as a construction, I am always heartened to find that students take their entangled responsibility of designing the curriculum very seriously. In this, I see the module as doing some quiet feminist work which pushes back against contractual, student-as-consumer notions of education.

DIFFRACTING THE CURRICULUM 2: HOW DOES NEW MATERIAL FEMINISM FACILITATE INNOVATIVE TEACHING AND LEARNING PRACTICES?

In "new" materialism, matter is vital and has vitality. Jane Bennett (2010) in *Vibrant Matter* refers to "thing-power" to explain the idea that matter is alive and lively. In Barad's agential realism, matter is seen to be an active participant in the world's becoming. Some of the teaching activities in the early sessions of the *Educational Spaces: Theories and Perspectives* module are specifically designed to encourage students into an encounter with the vibrant materialities in the educational spaces of the university. Early on, I ask them to focus on the matter of the classroom. Once started, students find it easy to make a very long list (desks, carpet, lectern, rubbish, dust, lights, pens, iPads, whiteboard etc), and then, to move from listing the matter in the room to asking questions about: "why is that there?" (for example, of a particularly oddly-positioned plug point), and "who decided that should go there?" (for example, of a set of tables positioned underneath a wall coat rack so it is impossible to hang coats on them), and "why is our module in this particular room and why is the room arranged as it is?" Such questions are important and lead into discussion of topics such as room design, facilities management, and space allocation – enabling me to suggest links with module readings and particular theorists. From this point, questions begin to emerge which encourage engagement with the sensory qualities of matter, space and things and our entanglement with them. In one class task, we sit in silence for two whole minutes and listen to the

lights hum, the feet pass outside, the traffic in the distance, and to our own breathing; we attend to considerations of heat, atmosphere, aromas and light.

These intra-active, embodied and “micro” forms of coming-to-know the immediate surroundings that one’s working-thinking-learning are entangled with are usually not something students have encountered before and they often find these activities initially either humorous or discomfiting, or both. But it doesn’t take long before students recognize the value of such a close “tuning-in” to the matter at hand. For example, taking a little time to consider how the desks are arranged in such a way that wheelchair-users can only have limited access to a portion of the room closest to the door becomes a critical engagement with the normative assumptions of able-bodiedness that underpin dominant processes of learning and teaching. The question of which bodies matter in this space come to the fore. Or, reflecting on why it is that they are sitting still, fixed and immobile, while I am roving freely around the room encourages a theoretical line to Foucault (1977) and the history of the production of educational knowledge as both a technology of the self and a product of the panopticon. From there, it is not a very big leap to considering the feminist politics of space in relation to questions about women-only spaces, unsafe spaces on campus, heteronormative spaces, and the in/accessibility of certain public spaces (such as libraries, museums, art galleries and parks), and the pedagogic work done in them in creating citizens.

As I see it, agential realism is generative for new modes of teaching and learning in three respects. The first is that it brings the force of matter, its capacity to affect and be affected, to the fore. Bennett (2010) ponders the affective disturbance she felt at seeing a collection of disparate items – a dead rat, a black plastic workman’s glove, a white plastic bottle cap, and a stick of wood – lying together in the gutter. She refuses to consider them as inert or dead but, instead, looks at the affective force they generate. Students carry around and bring all sorts of things into the classroom with them; they pack their university rooms with things from home and buy new things, including books, when they arrive; if they live at home they inhabit a space personalised over many years by things, stuff, and matter. New material feminism accords such “stuff” value and capacity, seeing it as agentic. That stuff *matters* is an innovative idea in higher education and disturbs those ingrained modes of learning and teaching which have for so long privileged the cognitive, the disembodied, the mind, the intellect and the abstract over the felt, the tangible, the touchable, and the material.

The second way in which agential realism provokes innovations in learning and teaching is that it provides a means to do away with the problem of scale. The new materialist presumption of flatter human-non-human ontologies makes it possible to move freely between the micro (“what is that plastic bottle of water doing on your desk?”), the meso (“what happens to the rubbish when you pop it in the recycling bin as you leave the classroom?”), and the macro (water as a globally scarce resource; the White Western privilege of being able to buy cheap bottled water in the downstairs café). What I have elsewhere called “material moments” (Taylor, 2013) offer a way of using the mundane matter at hand (a

water bottle, an iPhone, a coat over the back of a chair) as a means to lead into probing discussions about the “big,” difficult and complicated issues of place, belonging, movement, cost, the discarding and decay of matter. Privileging particularity through the “power of the good [materialist] example” (Flyvbjerg, 2004) highlights in a very straightforward way for students to grasp not just our entanglement with matter of all kinds, but also our ethical responsibilities in the intra-actions we effect. Drawing students’ attention to their/our entanglement in practices of mattering — of what/who comes to matter and how — is, I think, central to feminist pedagogic aims to question dominant, and unequal arrangements.

Third, an agential realist account also destabilizes linear, progressivist accounts of time and space. In terms of time, it draws students’ attention to learning and teaching as a happening in the *now*, as a unique concatenation of particularities in this particular space, thereby constituting pedagogy and curriculum as an unrepeatable space-time event of mattering. Learning and teaching instances are *never* the same, given they always entail and entangle different spaces, materialities, bodies and doings in each particular manifestation even where the curriculum is ostensibly “the same.” Engaging students with an agential realist account of space enables them to apprehend that space is not a mere “container,” but one (active) element in a complex materialist assemblage — in which the human is just one agent — and that assemblages, as *ad hoc* grouping of materialities, are in continual emergence, formation, and temporary stabilization, before they mutate into something else. Getting to know how assemblages work in this practical sense then helps students engage with important theoretical accounts of space, such as Massey’s (2005) account of space as a heterogeneous multiplicity, as well as helping them explore their own critical incidents as a temporary condensation of contingent, and multiple lines of influence. Such theory-practice theory-learning pathways are useful in enabling all sorts of complex understandings, conflicts, and contestations to emerge.

Fourth, agential realism undercuts traditional, anthropocentric sociological accounts of structure and agency, which (to be overly simplistic) see structures as relative immutable and constraining things (such a class, race, gender, ableism for example), and agency as the extent of active or passive human response to structures. Agential realism, as we have seen, replaces this with entanglement, intra-activity, and emergence through relations. This is one of the biggest pay-offs for me of theorizing and doing curriculum with new materialisms as students come to see how they themselves are intra-actively produced in relation to shifting ecologies of space, matter, affects, memories, relationships, biographies, experiences, and at the same time, they are co-producers of all these things — all of which are subject to change. Such an understanding, via reflection on their critical incidents, enlarges their sense of agency as capable and responsible social actors while effectively materializing. Haraway’s (1988) point that knowledge is a “politics of location,” and it is knowledge production which I now turn to.

DIFFRACTING THE CURRICULUM 3: HOW DOES NEW MATERIAL FEMINISM EXPAND THE MEANS BY WHICH KNOWLEDGE IS PRODUCED?

In Barad's agential realism, knowledge-production is a practice of mattering. Like the curriculum, knowledge is not a "thing," but a material-discursive apparatus that we bring into being through the cuts we make. Agential realism proposes that "bodies of knowledge" don't exist outside us; they come into existence as we materialize them, make them matter, embody them, and give them meaning in the enactments and doings that instantiate them. In this section, I explore some implications of this way of conceptualizing knowledge, drawing on specific practices from the *Educational Spaces: Theories and Perspectives* module. I first consider what a new material feminist approach does to subject, discipline knowledge and knowing; second, what it does to the reflexive self in learning.

The issue of the relation between subject/discipline and knowledge is important largely because the arrangement of knowledge into autonomous subjects and disciplines, each with their own integrity and distinctiveness, has been one of the hallmarks of the historical development of universities. In the current university landscape, disciplines are seen as the location of "powerful knowledge" (Young & Muller, 2013). Underpinning the power of the discipline is that entry to them is seen as a process of acculturation (Meyer & Land, 2005), and that, once entry has been gained, then one's academic identity is shaped in accordance with the norms of that particular "tribe" and the "territory" it inhabits (Becher & Trowler, 2001). Some have argued that such understandings, which see disciplines as stable entities, unchanging in their contents and practices over significant periods of time, are now somewhat outdated. Trowler, Saunders, and Bamber (2012), for example, argue that disciplinary cultures in higher education have shifted markedly over the last 20 years. They argue that disciplines are now more contextual and contingent, and that their boundaries are more porous. Thus, they trace a broad shift towards inter-disciplinarity across higher education, in recognition that complex problems, such as climate change, mass refugee movements, and educational underachievement of certain social groups, require solutions that draw resources from more than one discipline. In recognition of this shift toward interdisciplinarity, *Educational Spaces: Theories and Perspectives* requires students to work between human geography, spatial theory, feminist theory, education, sociology and material culture studies, and weave these into an analytical engagement with autoethnographic ways of writing.

This is a tough call for undergraduates: it requires them to do some profound critical thinking in working out how to use, and make meaning from, very different disciplinary and analytical resources. Students initially often express a very uncomfortable sense of "un-inhabiting." In the first two years of their degree, they become acclimatised to seeing "education" not as a discipline but as a field. However, despite this, their learning is largely organized via individual disciplines or two disciplines: a module on philosophy of education which draws

on history, or a largely sociological module on social identities, with aspects of psychology, for example. These modules do not go “outside” the four disciplines, which are seen as the traditional disciplinary bedrock of educational studies: history, psychology, philosophy, and sociology (Bartlett & Burton, 2007).

However, in *Educational Spaces: Theories and Perspectives*, they encounter disciplines usually seen as “beyond” education (for example, material culture studies), and have to bring them together analytically to bear on their own critical incidents. In this way, the module brings students face-to-face – again and in a different way – with “making a cut” as they become entangled with discipline and subject boundaries and try to work out – for themselves in relation to their own critical incidents – what is useful for their purposes and how ‘this theory’ (from one discipline) fits, or doesn’t fit, with ‘that theory’ (from another discipline) – and how both together support the analytical points they want to make about their critical incidents. In this, the module enables students to engage in knowledge production as “particular material articulations of the world” (Barad, 2007, p. 139). Furthermore, by entangling students intra-actively in inter-disciplinary knowledge-making, the module activates a materialist curriculum as a more nomadic and experimental form of knowledge production than is usual in undergraduate education – and one which, again, helps materialize in practical ways an epistemological shift from lecturer-led curriculum framing to student-led learning.

To supplement the destabilizing of disciplines, the module also deploys autoethnography to engage students as reflexive learners in new ways in a materialist, agential realist enactment of the curriculum. As an approach to researching and writing, autoethnography is situated at the intersection of ethnography and autobiography, and offers students a thinking, knowing and writing location to explore relations between self and society. Because autoethnography is oriented to the production of a “self-narrative that places the self within a social context.” It is “both a method and a text” and has often been deployed as a useful approach in giving voice to the experiences of marginalized people (Reed-Danahay, 1997, p. 9).

Autoethnography, then, offers a way of enabling students to question the usual boundaries between the subjective and objective, and supports them to write about what matters to them – including experiences relating to the body, emotion, values, and attachments – in ways which help them manage the potential vulnerabilities this approach might entail (Muncey, 2010). Students use evocative and creative modes of storying to produce original, written texts such as narratives, vignettes and poems, as well as creative products, including mood boards (collages of images, materials, and text evoking emotions), photography and 3D design (such as maps and material artefacts). In a fairly straightforward autoethnographic sense, then, by engaging students as makers, the module puts to work Barad’s (2007, p. 26) idea “that knowledge-making practices are social and material enactments.”

In addition, and in a more complex way, autoethnography pushes students toward working and thinking diffractively, in Barad’s sense of reading resources through each other, as they bring inter-disciplinary theoretical resources together

and bring those resources into analytic relation with their autoethnographic accounts of space and place. Not only does this help students produce the sort of profoundly reflexive analysis that its adherents (Denzin, 2014; Muncey, 2010; Spry, 2011) consider autoethnography capable of, it also entangles them (and me) in many passionate discussions about “truth,” voice, and representation regarding what counts as “legitimate” modes of academic writing.

In diffracting autoethnography via a range of disciplinary resources and via their critical incidents, students become keenly aware that knowledge production is a doing, a practice, an always contingent construction, not a transmission process as in banking models of education. It helps them see that the curriculum is about using knowledge to make differential patterns of mattering. The “alternative” modes of knowing in this module provoke students to question the dominant and authorized forms of undergraduate academic writing. At the same time, the module assessment via the writing of an individual academic article, participation in an anonymous class peer-review process, and class production of an issue of a journal, helps materialize an authentic and complete cycle of academic knowledge production.

CONCLUSION: DOING THE CURRICULUM DIFFERENTLY

My five years’ experience of teaching *Educational Spaces: Theories and Perspectives* has enabled me to gain some important theoretical and pedagogic insights. Students enjoy the module and often turn in excellent module evaluations. I am often struck by students’ sense of ownership, engagement and sheer fun in doing the module. It seems that what matters to students is that the module accords value to their personal experiences of space, that it creates pedagogic scope for them to include the embodied, affective and sensory dimensions of their learning alongside the cognitive and analytical, and that they can do creative forms of knowledge production that move away from the standard 4,000 word “argument-explanation” summative written assignment.

Educational Spaces: Theories and Perspectives works well (I think) because it dismantles some of the learning and teaching technologies that hold the “standard” undergraduate curriculum in place. The module enables students to engage meaningfully in curriculum design – they participate in materializing the (their) curriculum through an act of collaborative co-creation. In enabling this, the module effectively puts a high degree of control over the framing (Bernstein, 1971) in students’ hands, and engages them theoretically and practically in self-directed acts of scaffolding and synthesis. The various dimensions of diffracting the curriculum also materialize a profound shift in the pedagogical relationship away from passive “banking” processes of absorption and acculturation to intra-active doings, and practices in which students have a stake because they are the ones producing knowledge – making cuts – from their entanglement within a whole array of material-discursive resources at hand.

The module also materializes the power of inter-disciplinary knowledge production very powerfully, although those who only see powerful knowledge as

located in disciplines might disagree. In supporting ways for students to do the curriculum as a practice of mattering, the module helps shift how we (as educators) think about what matters in undergraduate curricula, and enables students to think about their entangled intra-actions with the humans and nonhuman others, spaces and materialities they encounter. As an exemplar of new feminist materialist agential realism, the module materializes just one way of doing the curriculum differently. This is important because the curriculum is an apparatus, and as Barad (2007, p. 146) explains, apparatuses are material-discursive practices which both reconfigure and constitute the world in its ongoing mattering. They are “the material conditions of possibility and impossibility of mattering; they enact what matters and what is excluded from mattering” (Barad, 2007, p. 148).

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