

# Actor Network Theory and Adult Education

The things and objects that help to enact and animate everyday work and learning practices are often ignored, dismissed or subordinated. Surfacing the materialities of practices is one appeal of theoretical perspectives such as Actor Network Theory (ANT). Situating ANT in the current theory landscape I will discuss the sociomaterial turn and highlight key conceptual contributions of ANT. I conclude by exploring the relevance of ANT to adult/continuing education and lifelong learning researchers, practitioners, and policy makers.

## Introduction

It is difficult for adult educators today to escape the objects in their practices. As Bruno Latour (2005) playfully states:

*“If you can, with a straight face, maintain that hitting a nail with and without a hammer, boiling water with and without a kettle, fetching provisions with or without a basket, walking in the street with or without clothes, zapping a TV with or without a remote, slowing down a car with or without a speed-bump, keeping track of your inventory with or without bookkeeping, are exactly the same activities, that the introduction of these mundane implements change ‘nothing important’ to the realisation of tasks, then you are ready to transmigrate to the Far Land of the Social and disappear from this lowly one.” (p. 71)*

Unless you are destined for the “far land of the social” devoid of the things of the world, it seems that objects are hard at work in the performance of any practice. Consider the many spaces and ways in which adult education and lifelong learning unfold: on the job, in classrooms, or more informally. An array of objects, things, even “stuff”—what we might call *material actors*—help to perform the pedagogies that happen in these spaces.

To name just a few: curriculum documents and policy edicts, classrooms and Google hangouts, books and YouTube videos, schedules and grade reports, food and beverages, statistics and certificates. The list of these actors is as broad and diverse as the field itself.

Such things might be animate or non-animate entities. Either way, without these things our everyday learning practices simply would not exist. For example, think about something you do at work or when you are learning. What things saturate this practice or perhaps float in the background of the activities performed? What if these things were not there: if there were no powerpoint presentations, databases, clocks, assignments, coffee cups, post-it notes, teaching schedules, texts, bulletin boards, or internet connections?

Yet, most professionals tend to ignore, dismiss or subordinate the materials—the things—that populate the backgrounds and foregrounds of professional work and learning practices. Objects can invite human actors into a way of doing or being. Of course, these are not just friendly invitations as objects may also exclude, regulate, entice, or obfuscate. Objects do and are therefore, political: both permitting and prohibiting.

Surfacing the politics of objects is one appeal of theoretical perspectives such as Actor Network Theory (ANT). Indeed, as Pels, Hetherington, and Vandenberghe (2002) state: “It is high time after this panegyric of textuality and discursivity, to catch our theoretical sensibilities on the hard edges of our social world again, to feel the sheer force of things” (p. 1).

ANT acknowledges the force of things, recognizing that the work that goes on in our world is performed through human-thing partnerships. Things are actors—actors that network and so connect up with other things as well as individuals. More about this below.

In this article I will discuss key conceptual contributions of ANT and situate ANT in the current theoretical landscape. I will draw on recent empirical ANT-inspired work throughout to illustrate how it might help to address questions and practices of interest to adult education researchers, practitioners, and policy makers.

## Attuning to things

My research examines how knowing practices and pedagogical spaces are changing as web and mobile technologies increasingly permeate everyday routines. In addition to human actors I have noticed actors such as these entangled in online learning practices: postings, bits of computer code, digital screens, LinkedIn profiles, the “next” button, Google analytics, archives, power cords, viruses, pictures on Facebook, the delete button, Google, batteries, and hash tags.

And so, I became interested in the objects surfacing in my research and indeed, my own everyday work and learning practices. I am curious about the things implicated and intertwined in daily work routines and knowing practices; practices increasingly entangled in software programs, digital devices, big databases, algorithms, and global circuitry. I have come to appreciate how technologies are not merely background tools but important actors in *co-creating* teaching and learning environments.

I wanted to bring *things* out of the background and into critical inquiry. But not in a deterministic way. Things are not just tools benignly sitting in the background catering to human whims. Nor do they determine and direct all human activity. Side-stepping such overly deterministic stances leads to questions beyond who or what is actually doing the work of adult education to a more entangled “who-what” is enacting learning practices.

## The Sociomaterial Turn

I took what is sometimes referred to as the *sociomaterial turn*. Sociomaterial sensibilities suggest that it takes both human and nonhuman actors to enact any practice. Lucas Inrona (2007) writes that objects “fold into us as much as we fold into them”(p. 14). Think about a consultant with a cell phone, a chef and his knives, the doctor and her stethoscope. It is the assembly (gathering or collection) of actors that is of interest. Not just the consultant or the cell phone but both together.

Sociomaterial perspectives challenge the conventional division between humans and the material things of our world and instead focus on the co-constitutive nature of practices. Tara Fenwick (2014) writes:

*“Instead of examining only human actors, their individual skills and their social inter-relationships, a sociomaterial view treats the social and material elements of knowledge practices as entangled and mutually constitutive. Materiality is particularly highlighted, revealing ways that bodies, substances, settings and objects combine to actually embed and mobilise knowledge, materialise learning and exert political capacity.” (p. 265)*

## Posthumanism

This way of thinking is reflective of posthumanist thinking. The growing body of posthuman scholarship questions the notion of the human as a central and separate category of being and instead sees the human as one actor in complex networks of social practices. Posthumanist thinking does not herald the end of humanity and wave the sceptre of a Borg-like existence (as depicted in episodes of Star Trek). However, it does mean thinking beyond human-centric notions of being to a more hybrid and humble conception of human actions in the world.

Foremost, posthumanism asks us to attend to what is most near to us: the everyday things of our world (Adams & Thompson, forthcoming).

## About ANT

ANT is part of this contemporary sociomaterial turn and has been used extensively over the past 30 years in fields such as medicine, public health, economics, digital humanities, new sociologies, and management and organizational studies. It has now made an entrée into several streams of educational research and practice although it is still somewhat marginal. In adult education and lifelong learning uptake of ANT is most pronounced in work around literacy, digital pedagogies, professional education, and policy.

For example, the [ProPEL Matters](#) blog (an international network of researchers and practitioners engaged in professional learning and leadership work) explores such issues.

ANT is not easily pinned down. It is described as a theory, approach, method, sensibility, and/or toolkit. The diversity of ANT-inspired theorizing means there is no one version of ANT. Similar to Fenwick and Edwards (2010), I use the term ANT as a “temporary marker” to refer to a “constellation of ideas” (pp.1-2). Such diversity offers a rich theoretical palette but can make it challenging to find one’s way into this scholarship.

Emerging from the field of STS (Science, Technology & Society) with roots in post-structuralism and ethnomethodology, ANT originates from the work of Bruno Latour and Michel Callon in the late 1970s and early 1980s. It has evolved since then as different thinkers have drawn on it to engage a range of different research questions.

You may come across references to Post-ANT. This is an attempt to demarcate a shift heralded by the book, *Actor Network Theory and after*, co-authored by John Law and John Hassard (1999), which brought together central ANT thinkers of the time, including Latour, Callon, and Mol. Post-ANT aligns with the more general performative turn in social theory, which I will elaborate below.

An emphasis on studying practices can situate ANT in the company of other practice-based theories

such as situated learning, CHAT (cultural historic activity theory), or Schatzki's work on practice. However, divergent ontological assumptions put ANT in stark contrast to these theories (refer to Fenwick, Edwards & Sawchuk, 2011 for more discussion). ANT and its more sociomaterial "cousins" such as complexity theory, new geographies, and other material orientations have a distinctive relational ontology. Object-oriented theorists Graham Harman and Karen Knorr-Cetina, postphenomenologists such as Paul Verbeek, and Tim Ingold from anthropology continue to trace very interesting intersections between ANT and other ontologically-driven perspectives, pushing and creating new sensibilities.

## ANT Tenets

The strengths of ANT are the unique conceptual entry points it creates for those more critically questioning work and learning practices. I begin by highlighting four key tenets of ANT: the legitimacy of nonhuman actors, the prominence of networks and assemblages, the endless work of translation, and the politics of object assemblages.

### Nonhumans matter

ANT creates an opening for regarding objects as legitimate actors. Starting from the "uncertainties and controversies about who and what is acting when 'we' act" (Latour, 2005, p. 45) creates expansive openings to explore work-learning practices. And it is a question one returns to throughout an ANT analysis. Acknowledging objects that matter is a highly material shift. However, as Latour (2005) asserts, the point is not to create an exhaustive list of all possible entities in an actor-network but rather to look for "mediators making other mediators do things", human or non-human (p. 217).

In one research project (see Thompson, 2012) I conducted interviews with self-employed workers to explore how they engaged with others online and the work-related learning practices being enacted. I also ended up "interviewing" the delete button. I never set out to study deleting practices. I became interested in this rather innocuous button as I attuned to how my participants talked about managing what presses in on screens as well as traces left in cyberspace as part of their online learning activities. And so they became entangled with the delete button. The delete button was a mediator: making other actors "do".

Although an object—such as the delete button—provides an entry point for a researcher, the focus is on the "connected" object or as Attila Bruni (2005) describes, the "relational game in which objects are involved (and which objects themselves activate)" (p. 358). This is an important ontological shift. It was the delete button *assemblage* and *deleting practices* that were of interest, and not the *delete button per se*. In other words, the gathering of actors in a specific practice or the sociality and connectedness around an object, such as the delete button. Different gatherings around an object and its different material performances can lead to the enactment of different practices and spaces.

As the delete button assemblage took on specific roles in online learning practices, it enacted people in particular ways: the efficient learner, the critical consumer of information, the self-disciplining worker, and/or the protected surveilled citizen (Thompson, 2012, p. 106). Each of these

enactments has implications for practitioners and researchers and draws attention to the complexities of learning online.

An ANT perspective enabled me to see how online learning is comprised of many micro-practices (including deleting). I could then delve into the specificities of these micro-practices rather than just painting online learning with a broad brush.

## **Assembly required: The importance of networks**

This leads to the second entry point: actor-networks and assemblages. ANT posits that elements achieve their form and character only in relation to the others (Law 2008). It is the connections, proximities and juxtapositions of actors within a practice that become interesting – and how connections come to be. Each actor is a network, hence the hyphenated phrase “actor-network”.

Borrowing from Callon (1987), an actor-network is both an actor (which networks) and a network (which can act). And so the focus is on assemblages – differently assembled – and how learning (and other phenomena) emerge as an effect of such assemblages.

Actor-networks are dynamic, in a constant churn of forming, staying together, or breaking apart. ANT is interested in tracing what is happening within the churn of these networks and the effects that emerge from these movements. Indeed, Latour (2005) argues the importance of attending to what networks become stabilized, given that a “normal” state of any actor-network is one of change. It is often the interplay between networks that is of interest. As Annemarie Mol (2010) observes, most ANT researchers now attend to the tensions in co-existing networks rather than unravel singular networks (p. 260).

For example, Tobias Röhl and Herbert Kalthoff (2014) followed several didactic artefacts (devices and objects designed for curricular purposes): in this study, a geometrical prism and model airplane used in geometry classes. Tracing how these objects were translated as they moved from the manufacturer, through the marketing apparatus, to the storage room, and finally used in the classroom they could see how educational practices are really a nexus of practices conducted at various sites but connected to each other via material objects and other mediators.

Following these mediators enabled Röhl and Kalthoff (2014) to make visible how educational work is distributed among different sites and actors: multiple intertwined performances. Not unfolding only in a classroom, educational work is performed by a nexus of actors from other places and times, who may not have any obvious pedagogical orientation but nevertheless, limit and expand pedagogical possibilities. By tracing interconnections around a particular object, Röhl and Kalthoff (2014) demonstrate how it is possible to sketch hierarchies and relations of power between different institutions and sites ultimately implicated in educative work.

Fenwick (2014) studied diverse forms of knowledge in inter-para/professional work activity. This is a field characterized by different practices and calls for more extensive development of interprofessional capacity and inter-professional education. ANT analysis was used to trace how knowledge circulates across an emergency mental health care context including 14 practitioners (paramedics, police, hospital admissions staff, psychiatric nurses and A&E consultants).

Through a careful tracing of the materiality of knowledge and its enactment in practice, what emerges are descriptions of several different sociomaterial worlds at play: “each with their own historically emergent assemblages of instruments, bodies, languages and material settings, embedding and enabling particular knowings-in-practice” (Fenwick, 2014, p. 276).

Consistent with Mol’s (2002) work on multiple ontologies, these different sociomaterial worlds are not merely different worldviews but rather present a vivid picture of multiple entangled networks:

*“The apparatus of the paramedics and police clearly distinguishes two different worlds, organised around different purposes and practices: the ambulance outfitted with medical equipment, assessment devices and cots focused on clinical diagnosis and medical care, and the police van equipped with flashing lights and sirens, handcuffs and breath analysers, for crime response and public safety. ... In contrast ... material practices in the hospital contain, order and control the encounter: the charge nurse labelling the situation, the waiting room, the curtained treatment cubicle, the standardised assessment protocols and diagnostic language”* (Fenwick, 2014, p. 276).

Such analysis brings the complexity of interprofessional practices to the fore and highlights how things, practices, and people do not necessarily move easily between these worlds. Any attempts to change or improve such practices must take an array of intersecting sociomaterial worlds into consideration.

Drawing on ANT sensibilities enabled Fenwick (2014) to illustrate *specifically* how sharing knowledge and coordinating practices—desired hallmarks of interprofessionalism—demands more than just better communication. A good sociomaterial analysis is descriptive and particular. It highlights what things do and what influence different material assemblages wield. In this study, how material assemblages bridge (or not) the different practice worlds of paramedics, police, and hospital staff make it very clear that material (and not just dialogic) interventions are needed.

## Translations performed

Translation is a powerful ANT concept that enables researchers to look at how assemblages come to be and how actors interface with others: willingly, under coercion, or unknowingly. It is through translations that entities meet up and interact with others, transform, become linked or de-coupled. ANT asks: How has this collection of actors come to be assembled? Or disassembled? Or re-assembled differently?

For example, in the area of policy, translation enables researchers to sort through how some understandings come to hold more power than others; how some actors, such as a “connected curriculum” policy statement emerges as strong and influential.

Tan See and Letchmi Ponnusamy (2013) draw on the notion of translation to describe how curriculum innovation is enacted in one school as teachers are enacted and translated into gatekeepers, owners of units of instruction, collaborators, and crafters of curriculum. Visions of a connected curriculum engage an array of stakeholders—becoming an obligatory passage point (aka Callon, 1986); in other words, the idea of connected curriculum becomes indispensable. Teachers who initiate curriculum ideas and persist with curriculum innovation become part of this obligatory passage point and thus their power increases, enabling them to enroll others in the network that is

now working to create and implement connected curriculum. But they do not work alone. Rather, this is the work of assemblages that include subject matter, curriculum policies, instructional plans, and even pinhole cameras, film, and laboratories.

The collaborative efforts described by See and Ponnusamy (2013) highlight the work going on to keep this particular assemblage energized and to keep actors, such as teachers, enmeshed. Knowledge is therefore performed in a particular way and is able to be mobilized. Through a series of moves, the vision is translated into practice.

## The politics of thingly gatherings

ANT work “maps the relations of practice” (Law & Singleton, 2012, p. 7). Made visible is an array of doings, realities, capabilities, voices, and tensions that enable a questioning of the politics of “thingly gatherings” (Thompson & Adams, 2013).

Emphasizing more critical understandings of the co-constitutive and performative relationship between people and the everyday things in work-learning practices enables researchers, practitioners, and policy makers to engage with notions of power and legitimacy, otherness and difference, morality and multiplicity. ANT dives headfirst into debates about the politics of things and the performativity of thingly gatherings.

Lesley Gourlay and Martin Oliver (forthcoming) call on ANT to challenge the idealized rhetoric of “virtual” educational experiences. They follow various digital artefacts to surface postgraduate students’ study practices and the spaces in which these practices are entangled. In this study, ANT helps to move beyond idealized simplistic accounts of digital learning practices and instead attends to the complex entangled ways in which successful practices are performed physically and socially through networks of people and things.

For example, Gourlay and Oliver (forthcoming) found that studying (a myriad of micro-practices such as searching, reading, writing, curating) could happen “everywhere” but only when specific combinations of space and technologies aligned. Spaces for study were made, not just found. Different technologies (i.e., Wi-Fi networks, iPads, books, memory sticks, and printers) allowed different kinds of “moorings”, enabling spaces to be strung together, providing continuity between lecture halls and libraries, the bus and cafes, and private, personal spaces. Here, ANT is used to attune differently to what is unfolding: a reframing that both opens a possibility for critique and supports a pragmatic orientation towards change.

## Shifting Stories

ANT research is descriptive. It focuses on specific practices. It is rich with materialities. ANT does not “pre-exist, waiting to be applied. Instead it is created, recreated, explored and tinkered with in particular practices” (Law & Singleton, 2012 p. 2).

Mol (2010) describes this sinuous nature of ANT:

*“The strength of ANT is not in its coherence and predictability, but in what at first sight, or in the eyes of those who like their theories to be firm, might seem to be its weakness: its*

*adaptability and sensitivity. If ANT is a theory, then a theory to help tell cases, draw contrasts, articulate silent layers, turn questions upside down, focus on the unexpected, add to one's sensitivities, propose new terms, and shift stories from one context to another.” (p. 262)*

How might this appear in research?

One example is how Dianne Mulcahy (2013) takes the contested and instrumental notion of “transfer” prevalent in adult learning discourse and draws on ANT to question standard understandings of this notion. Transfer has traditionally focused on how individuals take new learnings and knowledge into different contexts: knowledge is seen as a thing, individuals seen as possessing that thing, and the process of transfer seen as a linear moving around of that thing. In Mulcahy’s (2013) thoughtful analysis, transfer becomes a *relational* effect of social, textual, and material practices; an emergent performance. There is a sense of “*becoming-with*” the material, becoming with bodies, texts, technologies, spaces and places” (p. 1286). By proposing new understandings, drawing contrasts, and turning the notion of transfer upside down (as per Mol 2010 above), Mulcahy (2013) rejuvenates and transforms conceptions of transfer so that it may now open up more pertinent and complex questions.

## To what end?

I conclude by considering the advantages and disadvantages of becoming entangled with ANT. Although the theoretical arguments of attending to the co-constitutive nature of practices may be convincing, ANT researchers wrestle constantly with how to actually acknowledge the materiality of practices and the inclusion of the tracings, energies, and voices of objects implicated in those practices. ANT research is emergent and messy. For researchers comfortable with a step one—two—three process, ANT will be an unruly maverick. At best you develop heuristics (sensitizing concepts) to help identify and work with the data. As outlined at the outset of this article ANT demands a significant ontological shift that must work with your own worldviews.

But there are benefits. Returning to Mol’s (2010) statement, the usefulness of ANT is to help tell empirical cases, highlight the invisible, find the unexpected, and pose different questions. Researchers who draw on ANT do so in order to offer a different perspective on everyday practices and to acknowledge mess, contradictions, and ambivalences. How can this sort of analysis help to inform practice, policy and future research?

As See and Ponnusamy (2013) observe, their micro-analytic research into how art-anchored curriculum is enacted may leave educational leaders wondering how to respond to such research. A strength of ANT-inspired research is how it can make practices, actors, capabilities, and tensions visible in a way that enables more critical questioning of the politics of such assemblages. Of how particular things and people are—and became—knitted together in the performance of specific practices. This specificity has been illustrated in several examples in this article.

Bringing relations into view enables them to be interrogated. It keeps Latour’s (2005) “matters of concern” open. Law (2009) contends that practices are assemblages of relations that do realities and since realities are done in particular ways, the implication—the ontological politics—is that they could be assembled differently. This suggests one way to respond to ANT research: having caught a



glimpse of particular sociomaterial assemblages in action affords opportunities to imagine different choreographies: different actors assembled differently.

Engaging with ANT will influence the questions asked, the way phenomena is explored, what is attended to, how one understands and thinks with their data, and how it might be represented (Thompson & Rimpiläinen, 2011). Matter matters in research – as well as practice and policy. ANT provides one way to engage in these questions.

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