

Manipulating practices

A critical physiotherapy reader

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CHAPTER 4

New materialism and physiotherapy

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Abstract

Over the last decade, new materialism has emerged as a radical approach to philosophy that has profound implications for the way we think about education, practice and research. It challenges the human-centredness of our everyday lives, and proposes some interesting new ways to think about the future. It critiques 400 years of humanistic science, including the more recent interest in the phenomenology of “being”, drawing on the work of Deleuze, Heidegger, Foucault and others to propose a radical new ethics based on the affective capacities of all things. In this chapter, I offer a broad introduction to new materialism, focusing on the ways that its various forms challenge traditional hierarchies that have long placed white, anglophone men at the top of the social pyramid. I explore new materialism’s challenge to the ideas of binaries (normal: abnormal, body: mind, etc.), the nature of agency, and the implications for a monistic ontology of matter. I conclude the chapter by speculating on the ways new materialism might inform future physiotherapy practice, arguing that there is much in the approach that physiotherapists will find familiar, but also much that they may find profoundly interesting and challenging.

Background

Over the last few years, an increasing number of physiotherapy educators, practitioners, researchers and writers have turned their attention towards the experiential, qualitative and subjective dimensions of health and wellbeing. Moreover, although quantitative, experimental approaches to research remain the most popular kinds of knowledge, there is a growing interest in more holistic, embodied understandings of physiotherapy practice and people's experiences of recovery, rehabilitation and therapy. Over the last decade a radical new approach to thinking and practice has emerged that is neither quantitative nor qualitative. New materialism challenges the privilege given to humans in Western philosophy and establishes a new philosophy of matter. So far, it has drawn the attention of philosophers, scientists and sociologists from a panoply of disciplines, but as yet little work has been undertaken in healthcare.

A number of these “new materialist” approaches have emerged around the work of Michelle Foucault, Gilles Deleuze, Félix Guattari and others in recent years, including actor network theory, affect theory, object orientated ontology and speculative realism, and they draw on a wide range of influences, ranging from poststructural feminism to theoretical physics, deep ecology to posthumanism.

The various forms of new materialism cohere around some broad principles that will be unpacked in more detail below. To summarise, new materialist approaches reject the idea that humans are superior to all other forms of animate and inanimate matter and explore a “flat ontology” among all things. They are opposed to the binaries that have traditionally dominated Western thinking. They challenge the phenomenological emphasis on “being”, focusing instead on things “becoming”. And they draw from a diverse set of theoretical approaches, methodologies, and practice theories,

including those found in the pure and applied sciences, indigenous cultures, postmodernism and critical theory.

Despite new materialism's growing significance as a radical new voice in philosophy, it has made little impact in healthcare thus far, and only a few examples exist of its use in areas directly relevant to physiotherapy (see for example Gibson, 2016, 2006; Mol, 2002; Nicholls et al., 2016; Setchell, Nicholls, & Gibson, 2017; Shildrick, 1997, 2014). However, it does offer some interesting and potentially fruitful ways to examine some of the changes facing physiotherapy, healthcare, and some of the broader social questions facing humanity.

New materialism points to some innovative ways to engage ethically with others and re-invigorate our search for fairness and justice in the face of the increasingly discredited "humanist" project of the modern period (DeLanda & Harman, 2017). It opens a space for new relationships between people, animals, plants and objects in an ecosystem defined by the capacity for things to interact, not the superiority of one type of matter over another. Over the remainder of the chapter, I will unpack some of these ideas and opportunities and attempt to apply these to physiotherapy in an "expanded field" (Krauss, 1979), because to me, physiotherapy is concerned with all matter, and new materialism offers some tantalising opportunities for physiotherapists to define a practice paradigm that could open up multiple new "lines of flight" (Deleuze & Guattari, 1987).

Key principles

New materialism, as a concept, can be quite difficult to grasp, partly because it offers such a radical alternative to conventional ways of thinking, and partly because it relies on new modes of expression to define its parameters. Reading the works of some of its proponents, one is struck by how language is used differently. The meanings of

common terms like agency, becoming and desire, are sometimes extended to non-human actants, and less common words like *clina-men*, *conatus* and *monism* are used to express alternative ways of thinking. New materialism also offers some radical approaches to grand philosophical concepts like ethics, ontology, subjectivity and teleology, and so may seem counterintuitive and perplexing to some. In response to this challenge, what follows is an introduction to some of new materialism's key principles. This is by no means a comprehensive account, and it inevitably takes some liberties with the breadth and diversity of writings on the subject. I have focused on five main principles of new materialism: "thing-power"; the challenge to traditional hierarchies; the appeal of monism and opposition to binaries; agency; and intermingling and becoming. After outlining these key principles, I close the chapter by looking at some of the ways new materialism might relate to a more expansive physiotherapy.

Thing-power

The first principle that unites many new materialists is an interest in objects, things or "matter". New materialists are interested in what Jane Bennett called "thing-power" (Bennett, 2009, p. xiii). This is the idea that all matter has the capacity to affect and to be affected, and so challenges the idea that some "things" – particularly human things – matter more than others. New materialists see matter as dynamic and responsive, and these properties are inherent in the things themselves, not merely as human projections (ibid, p. 5). "Matter", for new materialists, is no longer seen as passive, intractable and lifeless "stuff", but as vibrant material that makes up human and non-human life: from tiny atoms and chemical compounds, to complex organisms and social systems.

Focusing on matter in this way demands a considerable ontological re-orientation away from the kinds of anthropocentric

(or human-centred) positions that have dominated thinking for many centuries (Fox & Alldred, 2016b). New materialism critiques much of this history, arguing that we have developed ways of thinking and practicing that are too humanistic, and have looked to understand the world through human eyes (almost all qualitative research and person-centred practice, for instance, does this), or assert human command of other people and the natural world (most quantitative research and evidence-based practice). It argues that while these humanistic approaches have brought considerable benefits to us, they have also contributed, amongst other things, to the normalisation of white, male privilege and the systematic and industrial-scale abuse of the natural world for human gain. Many see new materialism, therefore, as a radical and necessary alternative to humanistic thinking and a departure from the anthropocentric philosophies that have dominated Western cultures since the Enlightenment.

For physiotherapists, *matter* gives form to our practice. Matter can mean the anatomical structures that we mobilise, or the bodily functions, synaptic connections, and the diffusion of substrates that we work to enhance. It can mean the assemblages that form between the hand of the therapist and the skin of the patient – and the myriad neuro-chemical processes that mediate the therapeutic experience. Matter also refers to objects – including the inanimate things that help to define our practice and differentiate what we do from others: our goniometers and stethoscopes, treatment beds and patient records. Critically, these aspects of practice are often thought of as less important than the human experiences, and so new materialism sees this privileging of the human experience as a real problem.

The challenge to traditional hierarchies

Many new materialists draw inspiration from the work of philosophers like Baruch Spinoza and Friedrich Nietzsche, and more

recently, Gilles Deleuze, Félix Guattari, Martin Heidegger and Michel Foucault, who have all critiqued the hubris of “man’s” sovereignty and dominion over the natural world¹. Continental philosophers like Deleuze and Foucault have been particularly scathing of the idea that humans are superior to all other living and non-living things, with Foucault echoing Nietzsche in proclaiming the “Death of Man” half a century ago (Foucault, 1970). Figure 4.1 below shows a representation of perhaps the most familiar representation of man’s place in modern Western culture.

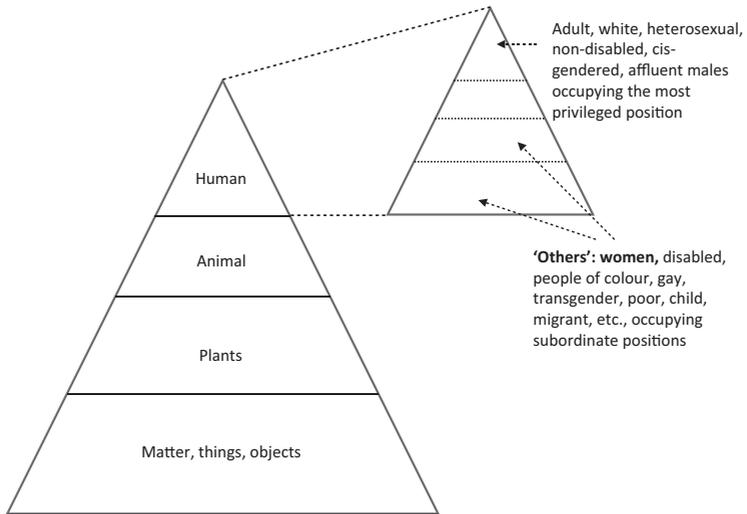


Figure 4.1: Human-centred hierarchy of the natural world

- 1 I use the word “man” in specific places within the text to refer to the classical tradition of seeing the white, privileged, heteronormative and non-disabled male as the apotheosis of Western culture. This treatment is seen by many new materialists as inherently problematic, and evidence of a hierarchy that extends through “other” humans (non-male, non-white, disabled, marginalised populations, etc.), down through animals and plants, and ending finally with inanimate objects. Destabilising the metaphorical pyramid that has elevated man to its artificially constructed summit, is one of the fundamental tenets of new materialism.

It seems axiomatic that humans should sit above all other matter in the universe, given our capacity for conscious self-awareness, spoken language and ethical reasoning. Indeed, the belief that humans command the rest of the natural world can be found in pre-Socratic writing and Aristotle's view that only man had an intellectual or rational soul and was, as a result, superior (Thomas, 1983, p. 30-1). Existential German philosopher Martin Heidegger described inanimate objects as being "without world"; animals and plants as "poor in the world" with only humans as having the capacity to be "world producing" (Heidegger, 1995). Jeffrey Nealon describes the hierarchy that underpins much of the philosophy, politics, science and religion in the west as "rigidly demarcated from the bottom up" (Nealon, 2016, p. 32).

The idea that humans are superior to all other matter in the cosmos, therefore, has a long history. Notwithstanding the many human achievements in the arts; economics; linguistics and taxonomy; science and technology; social organisation; and politics, some have argued that the belief in human dominion over all things has resulted in many of humanity's most appalling acts of hubris. From the abuse of animals and the destruction of the natural world for personal gain, to slavery, human trafficking, and genocide, there are many examples of human arrogance and self-conceit that can be attributed to our belief in our age-old sense of privilege and natural advantage.

One of the most enduring and pernicious conceits is the belief that within the human domain a further hierarchy exists, such that white, heterosexual, Western males represent the most refined, sophisticated and idealised form of humanity. There are now vast volumes of writing from disabled people, ecology advocates, LGBTI activists, feminists, Marxists, equal rights activists, and many others, who have long disputed this ordering, and many are now turning to new materialism for tools with which to trouble prevailing patriarchal, colonial, heteronormative and anthropocentric attitudes (Butler, 1993; Davies, 2016; Feely, 2016; Haraway, 2006, 2008; Lather, 1993; Riskin, 2016).

Ironically, physiotherapists have really only just begun to consider the subjective human experience of physiotherapy, and embrace the “idealist” philosophies of people like Martin Heidegger & Maurice Merleau-Ponty (see, for example, Bjorbækmo & Engelsrud, 2011; Sviland, Martinsen & Råheim, 2014; Standal & Engelsrud, 2013). Fewer still are exploring some of the social structures that govern human experience. So, the desire to “flatten” the traditional hierarchy that privileges the human over all things perhaps comes before we have really understood the possibilities that humanistic inquiry (e.g., common forms of qualitative research) offers. Nevertheless, new materialism argues that privileging the human is not without its risks, however, and that we cannot afford to endorse the hubris in the belief that we are “Lords of all we survey”.

The appeal of monism and opposition to binaries

New materialists argue that hierarchies are problematic because they create the possibility for discrimination, stigma and abuse. Something is always sitting above something else in a hierarchy, and such positioning implicitly involves value judgements about the virtues and qualities of some things over others. Such hierarchies are only possible because human societies have long sought to understand the world through taxonomies of difference and binary judgements. For the last 400 years or so, these judgements have been dominated by scientific classifications and logics, through which all matter is judged and ranked according to its proximity to human norms. Truth can be seen to be superior to lies; health is better than sickness; reason more desirable than unreason; normality preferable to abnormality; and so on. Such binary judgements implicitly privilege one thing over another in an endless series of

comparisons that ultimately results in a universal hierarchy that defines what Foucault called the “order of things” (Foucault, 1970).

For its part, modern healthcare would not function if it were not for binary judgements made about ill (vs healthy) people, made by qualified (vs “lay” or quack) practitioners, working in organised institutional settings (as opposed to everyday community locations). Almost the entire basis of physiotherapy practice is based on binaries: from patient assessments that define what is wrong and needs to be fixed; to ethical codes that state what is professional behaviour and what is unprofessional; to funding systems that determine who is eligible for financial support and who is not.

New materialists argue that binary judgements are deeply problematic, drawing, instead, on “flat”, or what Leibniz called “monist” – meaning “singular” – ontologies. In this approach, reality is not ordered hierarchically, but as a flat plane or multi-dimensional matrix in which all matter is rhizomatically distributed (Deleuze & Guattari 1987). No arbitrary distinction is made between the values and qualities of humans, inanimate objects, plants, animals, emotions and thoughts, cultural beliefs, symptoms, functions, rocks and bus tickets, digital media, theories, pets, football fans, partners and office shelving systems. Instead, new materialists utilise a diffuse “continuum of materiality” (Fox & Alldred, 2016a, p. 4), in which human and nonhuman matter is considered dispersed and differentiated. New materialists view microbiological matter and macro-social processes on the same “plane of consistency” (Deleuze & Guattari, 1987), often occupying multiple locations at the same time. They look to the self-organising capacity of things in combination, as well as the local, material effects of things in a constant state of flux – ever changing, moving and becoming. New materialists redefine what people have come to refer to as “agency” – a term normally used to denote the volitional acts of humans – allowing that all things are expressive and, as such, vibrant and agentic.

New materialist physiotherapy would begin, therefore, from the basis that human subjectivity is not superior to all other forms of matter. This might elevate, for instance, the status of a wheelchair from something that is merely an “aid” to a person’s mobility, to a necessary and equal partner in an assemblage that allows a person to move. Oxygen, processes of diffusion, muscle contractions and feelings of breathlessness, might be allied to air quality, pollution standards, and plant photosynthesis in an ontological equivalency that spans all human and non-human entities.

Agency

New Materialism breaks with the Enlightenment belief that “a scientific explanation must not attribute will or agency to natural phenomena” (Riskin, 2016, p. 2). Agency has long been considered one of the defining characteristics of the human species, and a concern “that seems as close to the heart of what science is as any scientific rule or principle” (ibid, p. 4). By contrast, new materialists believe that agency is the capacity of things to affect and be affected, and this approach “elides any distinction between physical/biological materiality and the expressive realms of concepts, thoughts and feelings” (Fox & Aldred, 2016b, p. 18). Thus, a park bench exercises agency when it provides a resting place for a weary walker. It is not just the walker, with her powers of conscious decision-making, that “decides” what actions to take; all things play their part and form affective assemblages if the park bench is to affect change and make a synergistic moment between the seat and the walker possible. Even negative spaces, like openings in a tree line or the retirement of a work colleague, become agentic when they provide space for other things to move in to. In Deleuzian and Guattarian terms, affect equates to the desire things have to make things happen (Deleuze & Guattari, 1987).

The park bench, by virtue of its particular configuration and assemblage of capacities, desires to be sat on (as opposed to making a cup of tea, for which it is distinctly ill equipped). This is what Jane Bennett calls the vibrancy and vitality of things (Bennett, 2009). Of course, there have been examples of the power of matter to affect human life written throughout the history of education, philosophy, politics, science and society, but in these accounts agency is an attribute “given” to things by people, and is not inherent in the things themselves. Heidegger, for example, spoke of *das Zeug* or the “usefulness” of tools, and Marx wrote about historical materialism as a structural force driving human society. Few, until recently, have turned away from this anthropocentrism, and sought to understand what Barad et al. called “things in phenomena” (Barad, Nelson & Nelson, 1996, p. 176).

Intermingling and becoming

If agency is the capacity for things to act and to produce the world in all its dynamic vibrancy and flux (Fox & Alldred, 2016b, p. 4), the things we see, feel, hear, taste and touch can be said to be the “effects” of affective properties interacting with their environments: the result of millions of interminglings and assemblages formed by matter. This mass of matter in constant formation and deformation represents an “affect economy” (Clough, 2004, p. 15). In this economy, the value of matter is judged not by their proximity or use value to humans, but by the ability to affect or be affected by other things. A new materialist affect economy assumes that assemblages involving humans represent only a tiny percentage of the interminglings taking place across the cosmos at any one time, and so offers another implicit critique of the anthropocentrism present in most sciences and cultural studies.

Karen Barad has argued that the affect economy cannot be understood as a trade and exchange between isolated sovereign entities,

arguing that it is misleading to talk about matter *inter*-acting, because this implies that each element is in some ways distinct from the other. Barad uses the term *intra*-action instead to refer to actions that occur within two or more already entangled non-bounded entities (Barad 2007; Dolphijn & Van der Tuin, 2012). As phenomena form and de-form, they acquire new capacities to affect and be affected, and this engenders a constant movement that “goes on repeatedly within assemblages, in a ‘rhizomatic’ branching, reversing, coalescing and rupturing flow” (Fox & Alldred, 2016b, p. 24). In this way, it is somewhat arbitrary and imprecise to attempt to define the boundaries of agentic phenomena (what Deleuze and Guattari called “territorialisation”), since they are always in transition; always becoming, never sedimenting into “being”.

New materialists reject the hermeneutic fascination with “being” and look, instead, to the transformative potential of things “becoming”. They are less concerned with what things “are” and more with what things might become when they intra-act with other things. They are concerned with the dynamism, evasiveness and slipperiness of matter in combination. Where “being” represents stasis, territorialisation, and fixity; “becoming” represents movement, deterritorialisation, deconstruction and flow. Speed and slowness – terms intimately connected with movement and physiotherapy – become key metrics for the affective capacity of assemblages, because they focus more on the dynamic potential of phenomena and less on noumena or the things-in-themselves (Fox & Alldred, 2016a, p. 59).

How might new materialism relate to physiotherapy?

In many ways, physiotherapy is ideally suited to new materialist approaches, because new materialism is fundamentally about complexity and movement, and expert therapy demands an

understanding of all matter: from the body's structures and functions, to a sensitive humanism, from an appreciation for the social context influencing people's lives, and an awareness of the non-human matter that mediates people's engagement with the world. The problem has been finding a philosophy or theoretical framework that makes sense of this complexity and diversity.

Having spent much of its history drawing from the quantitative biological sciences, physiotherapists are now starting to look towards existential philosophy and the humanities to better understand our practice relationship with clients, and what physiotherapy-related matter means for people. Nevertheless, new materialists would argue that such inquiries largely reinforce the same binary distinctions between quantitative and qualitative, nature and culture, objective and subjective, which were critiqued earlier in the paper. Therefore, although physiotherapy ought to be well suited to complex and diverse philosophies and theories, it is perhaps anchored to traditional and well-established binaries that, some have argued, may be resisting necessary reform (Nicholls 2017).

Physiotherapists could retain their affinity for the biological sciences

In recent years, there has been much criticism directed towards physiotherapy's historical affinity with the body-as-machine, (Bjorbaekmo & Engelsrud, 2011; Nicholls, 2017; Nicholls & Gibson, 2010). These authors have argued that "real" physiotherapy practice is much broader than the profession itself allows, and that if physiotherapy is to survive and prosper into the future, it must find ways to account for this breadth, and explain its complexity to itself and to the publics that draw on its skills and resources (Nicholls, 2017). Inherent in this is the need to incorporate new thinking with the best of the old.

Far from dismissing physiotherapy's biomechanical heritage, as some recent humanistic analyses have done, new materialism not only

accepts the physical reality of the body, it embraces it and encourages practitioners to see all matter non-hierarchically. Further, it draws no distinction between the biological and the social, so dissolves the need for the kinds of factional tribalism about what is quantitative and what is qualitative. It sees the biological in everything. Examples of this openness to the biological, chemical and physical nature of the world are everywhere in the writings of new materialists. Karen Barad, for example, draws on the work of Niels Bohr's measurement of sub-atomic particles to develop the idea of phenomena and intra-action (Barad, 2007), Jane Bennett examines food, metals, electricity and stem cells in her work on "vibrant matter" (Bennett, 2009), and John Dupré writes about polygenomic organisms, alleles and microbiota (Dupré, 2012).

Movement and becoming

If there is one concept that most physiotherapists would agree lies at the heart of their professional identity, it would be movement (Covington, 2015; Sahrman, 2014; Standal & Engelsrud, 2013; Wikström-Grotell & Eriksson, 2012). In an age when even orthodox health professions need to market their competitive advantage, movement appears to be a commonly used term that physiotherapists feel confident to rally behind (see, for example, <http://www.wcpt.org/wptday> and <http://tinyurl.com/n7fmvol>). Some physiotherapy authors have even argued that the profession needs to "own the human movement system" (Sahrman 2014, p. 1040). Movement has been a defining feature of theoretical models of physiotherapy for nearly half-a-century (Broberg et al., 2003; Cott et al., 1995; Hislop, 1975), and persists in the language of participation and activity (Escorpizo, 2015). When physiotherapists refer to movement, however, they are generally referring to the physical movements of the body or its parts. Physiotherapists rarely engage with other meanings of movement: the microscopic osmotic

movement of molecules across cell membranes, for example, or the macroscopic population-scale movements of migrations and diasporas (Nicholls, Gibson & Fadyl, 2015). This is a largely self-determined approach, with physiotherapists' ability to distinguish themselves from other competing healthcare providers a primary driver in the desire to "own" movement (Nicholls, 2017).

New materialism is a philosophy that embodies movement, displacement, restlessness, deterritorialisation (Deleuze & Guattari, 1987), latent potential, and disruption as a positive force for change on a much grander scale (Braidotti, 2013; Gibson et al., 2014; Goodley & Runswick-Cole, 2014). It is concerned with the ceaseless "becoming" that occurs in the act of intra-acting. More than a decade ago, physiotherapist Barbara Gibson suggested ways in which the connectivity between things might carry therapeutic potential, pointing to a way in which physiotherapists and others might think differently about movement;

Connectivity is a potential to uncover new and varied ways of becoming and considering how things could be otherwise. Instead of resisting connectivity, the project could be to explore connections and appreciate differences: becoming other(s) in multiple ways, a multiplicity of flowing connections made, released and reformed. These multiple becomings point towards a freedom. Not freedom from interference but freedom to experiment, explore, peek outside of the limits, journey there and back again. Refuse and re-fuse (Gibson 2006, p. 195).

In recent years, some of the other authors in this book have joined Gibson in examining connectivity and its potential to function as a new philosophy of movement, in an attempt to open up physiotherapy to some new ways of thinking and practicing (Nicholls et al., 2016; Nicholls et al., 2015; Standal & Engelsrud, 2013). This work suggests that a new expanded "materialist"

approach holds some latent potential for physiotherapists and others interested in movement in an expanded field.

Connecting physiotherapy to a greater social purpose

There can be little doubt that the physiotherapy profession has gained the respect and trust of the public, of its peers, and of “the state”, in large part because it has been able to demonstrate its usefulness. Physiotherapy has grown through times of war, epidemic and social reform because it legitimised a set of therapeutic practices and, when necessary, adapted these to the changing needs of society (Nicholls, 2017). The future for the profession may therefore depend on its ongoing ability to adapt and reform, and what is increasingly clear is that technical proficiency and a depersonalised approach to the body-as-machine will no longer be enough (Trede & McEwan, 2016). As public health services become decentralised, and people are expected to exercise greater choice and responsibility for themselves, health and wellbeing has become a terrain upon which complex negotiations are taking place, and the role of the “expert” practitioner is coming increasingly in question (Law & Mol, 2002; Mol, 2002).

Physiotherapists have been reticent to explore the more profound aspects of their work, retaining a professional modesty about the biomechanical discourses that underpin their social functions. There can be little doubt, however, that physiotherapy practice can affect some people profoundly, and the reasons why people engage physiotherapists frequently have less to do with the more prosaic matters of bodily function than what these facilities make possible; how physiotherapy makes people feel; and how this represents transformative possibility. New materialism is grounded in a philosophy of affective potential, and so provides language and ideas for ways that practitioners might express the radical possibilities

of physical therapy. It subverts familiar language and offers alternatives to the humanistic, scientific and sociological binaries that now appear to be functioning like a dragging anchor in the face of rapid and dynamic social change. Articulating the real breadth of physiotherapy's affect economy may therefore function as a liberating, progressive and critical act of resistance to the questions that are now emerging around the future for physiotherapy practice.

A new methodology to understand the complexity of physiotherapy

Finally, new materialism may provide an innovative set of conceptual tools to allow practitioners to better see themselves and connect with a broader ecosystem, with the result being that the profession may find a new purpose and alternative ways to respond to the rapidly changing world it operates within. Baker wrote that "The hardest thing of all to see is what is really there" (Baker 1967, p. 19), and so it would seem when it comes to the familiar ways that we have come to understand the world through a modern, humanistic lens. Over recent years, however, criticisms have been levelled at some of the limitations of these anthropocentric approaches, and these have resulted in a wave of new object- and ontologically-orientated approaches to research and writing, of which new materialism is a powerful contributor.

Adopting an entirely new philosophical approach to thinking and practicing physiotherapy is not without its risks however. Moreover, physiotherapists would need to unlearn much in order to adapt their practice to the needs of future healthcare. At the same time, new materialism allows for a great deal that has been long treasured by physiotherapists, and reconciles many of the tensions that have slowed the growth and development of practice for many years. Perhaps most significantly, new materialism provides a

set of methodological tools to allow physiotherapists and others to examine their practice, redefine their professional purpose, establish a new professional ethics, and connect with a much broader affect economy.

Conclusion

In this chapter, I have sought to introduce new materialism, a relatively new and, I believe, exciting paradigm. The reason for including it in this edited collection is that it may offer physiotherapists positive ways to practise otherwise. It destabilises many of the traditional binaries common to contemporary healthcare, and offers a significant challenge to the kinds of humanistic philosophy that have dominated Western philosophy for centuries. Its emphasis on an anti-hierarchical flat ontology, and its focus on the agency of all things, bypasses some of the tensions now being experienced by physiotherapists and others, and replaces them with an entirely new way of thinking and practicing, that connects physiotherapy with a much broader ecosystem. It represents a collection of related philosophies, methodological tools, and an array of theoretical orientations whose time has come, and it may be of immeasurable support to those who wish to radically transform their practice.

References

- Baker, J. A. (1967). *The peregrine*. New York: New York Review Books Classics.
- Barad, K., Nelson, L. H. & Nelson, J. (1996). Meeting the universe half way: Realism and social constructivism without contradiction. In L. H. Nelson & J. Nelson (eds.), *Feminism, science and the philosophy of science* (161–194). Dordrecht: Kluwer.
- Barad, K. M. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Durham: Duke University Press.

- Bennett, J. (2009). *Vibrant matter: A political ecology of things*. Durham (NC): Duke University Press.
- Bjorbækmo, W. S. & Engelsrud, G. H. (2011). “My own way of moving” - movement improvisation in children’s rehabilitation. *Phenomenology & Practice*, 5(1), 27–47.
- Braidotti, R. (2013). *Metamorphoses: Towards a materialist theory of becoming*. Oxford: Wiley.
- Broberg, C., Aars, M., Beckmann, K., Emaus, N., Lehto, P., Lähteenmäki, M. -L., . . . Vandenberghe, R. (2003). A conceptual framework for curriculum design in physiotherapy education – an international perspective. *Advances in Physiotherapy*, 5(4), 161–168. doi:10.1080/14038190310017598.
- Butler, J. (1993). *Bodies that matter: Feminism and the subversion of gender identity*. London: Routledge.
- Clough, P. T. (2004). Future matters: Technoscience, global politics, and cultural criticism. *Social Text*, 22(3), 1–23.
- Cott, C. A., Finch, E., Gasner, D., Yoshida, K., Thomas, S. G. & Verrier, M. C. (1995). The movement continuum theory of physical therapy. *Physiotherapy Canada*, 47(2), 87–95.
- Covington, J. K. (2015). *Developing a professional embodiment of movement: A situational analysis of physical therapist clinical instructors’ facilitation of students’ emerging integration of movement in practice*. Thesis.
- Davies, B. (2016). Ethics and the new materialism: A brief genealogy of the postphilosophies in the social sciences. *Discourse: Studies in the Cultural Politics of Education*, 1–15.
- DeLanda, M. & Harman, G. (2017). *The rise of realism*. John Wiley & Sons.
- Deleuze, G. & Guattari, F. (1987). *A thousand plateaus — capitalism and schizophrenia*. Minneapolis: University of Minnesota Press.
- Dolphijn, R. & Van der Tuin, I. (2012). *New materialism: Interviews and cartographies*. Ann Arbor: University of Michigan.
- Dupré, J. (2012). *Processes of life: Essays in the philosophy of biology*. Oxford: Oxford University Press.
- Escorpizo, R. (2015). Summary and way forward: Doing more of ICF in physical therapy. *Physiotherapy Research International: The Journal for Researchers and Clinicians in Physical Therapy*, 20(4), 251–3. doi:10.1002/pri.1656.

- Feely, M. (2016). Disability studies after the ontological turn: A return to the material world and material bodies without a return to essentialism. *Disability & Society*, 1–21. doi:10.1080/09687599.2016.1208603.
- Foucault, M. (1970). *The order of things: An archaeology of the human sciences*. London: Tavistock.
- Fox, N. J. & Alldred, P. (2016a). Sociology, environment and health: A materialist approach. *Public Health*, 141, 287–293. doi:10.1016/j.puhe.2016.09.015.
- Fox, N. J. & Alldred, P. (2016b). *Sociology and the new materialism: Theory, research, action*. London: Sage.
- Gibson, B.E. (2016). *Rehabilitation: A post-critical approach*. New York: Taylor and Francis.
- Gibson, B. E. (2006). Disability, connectivity and transgressing the autonomous body. *Journal of Medical Humanities*, 27(3), 187–96. doi:10.1007/s10912-006-9017-6.
- Gibson, B. E. (2014). Parallels and problems of normalization in rehabilitation and universal design: Enabling connectivities. *Disability and Rehabilitation*, 36(16), 1328–1333. doi:10.3109/09638288.2014.891661.
- Gibson, B. E., Carnevale, F. A., & King, G. (2012). “This is my way”: Reimagining disability, in/dependence and interconnectedness of persons and assistive technologies. *Disability and Rehabilitation*, 34(22), 1894–9. doi:10.3109/09638288.2012.670040.
- Gibson, B. E., King, G., Teachman, G., Mistry, B. & Hamdani, Y. (2016). Assembling activity/setting participation with disabled young people. *Sociology of Health & Illness*. doi:10.1111/1467-9566.12496.
- Gibson, B. E., Nixon, S. A. & Nicholls, D. A. (2010). Critical reflections on the physiotherapy profession in Canada. *Physiotherapy Canada. Physiothérapie Canada*, 62(2), 98–100, 101- 3. doi:10.3138/physio.62.2.98.
- Goodley, D. & Runswick-Cole, K. (2014). Becoming dishuman: Thinking about the human through dis/ability. *Discourse: Studies in the Cultural Politics of Education*, 37(1), 1–15. doi:10.1080/01596306.2014.930021.
- Haraway, D. (2006). *A cyborg manifesto: Science, technology, and socialist-feminism in the late 20th century* (117–158). London: Springer.
- Haraway, D. J. (2008). *When species meet*. Minneapolis: University of Minnesota Press.

- Heidegger, M. (1995). *The fundamental concepts of metaphysics: World, finitude, solitude*. Bloomington: Indiana University Press.
- Hislop, H. J. (1975). The not-so-impossible dream. *Physical Therapy*, 55(10), 1069–1080.
- Krauss, R. (1979). Sculpture in the expanded field. *October*, 8, 31–44.
- Lather, P. (1993). Fertile obsession: Validity after poststructuralism. *The Sociological Quarterly*, 34(4), 673–693.
- Law, J. & Mol, A. (eds) (2002). *Complexities: Social studies of knowledge practices*. Durham: Duke University Press. Retrieved from <http://site.ebrary.com/id/10207677>
- Mol, A. (2002). *The body multiple: Ontology in medical practice*. Durham: Duke University Press.
- Nealon, J. T. (2016). *Plant theory: Biopower & vegetable life*. Stanford: Stanford University Press.
- Nicholls, D. A. (2017). *The end of physiotherapy*. London: Routledge.
- Nicholls, D. A. & Gibson, B. E. (2010). The body and physiotherapy. *Physiotherapy Theory and Practice*, 26(8), 497–509.
- Nicholls, D. A. & Larmer, P. (2005). Possible futures for physiotherapy: An exploration of the New Zealand context. *New Zealand Journal of Physiotherapy*, 33(2), 55–60.
- Nicholls, D. A., Atkinson, K., Bjorbækmo, W. S., Gibson, B. E., Latchem, J., Olesen, J., . . . Setchell, J. (2016). Connectivity: An emerging concept for physiotherapy practice. *Physiotherapy Theory and Practice*, 32(3), 159–70. doi:10.3109/09593985.2015.1137665.
- Nicholls, D. A., Gibson, B. E. & Fadyl, J. K. (2015). Rethinking movement: Postmodern reflections on a dominant rehabilitation discourse. In K. McPherson, B. E. Gibson, & A.
- Riskin, J. (2016). *The restless clock: A history of the centuries-long argument over what makes living things tick*. Chicago: University of Chicago Press.
- Sahrman, S. A. (2014). The human movement system: Our professional identity. *Physical Therapy*, 94(7), 1034–1042. doi:10.2522/ptj.20130319.
- Setchell, J., Nicholls, D. A. & Gibson, B. E. (2017). Objecting: Multiplicity and the practice of physiotherapy. *Health* (London, England: 1997), 1363459316688519. doi:10.1177/1363459316688519.

- Shildrick, M. (1997). *Leaky bodies and boundaries: Feminism, postmodernism and (bio)ethics*. London: Routledge.
- Shildrick, M. (2014). "Why should our bodies end at the skin?": Embodiment, boundaries, and somatechnics. *Hypatia*, 30(1), 13–29. doi:10.1111/hypa.12114.
- Standal, F. & Engelsrud, G. (2013). Researching embodiment in movement contexts: A phenomenological approach. *Sport, Education and Society*, 18(2), 154–166. doi:10.1080/13573322.2011.608944.
- Sviland, R., Martinsen, K. & Råheim, M. (2014). To be held and to hold one's own: Narratives of embodied transformation in the treatment of long lasting musculoskeletal problems. *Medicine, Health Care & Philosophy*, 17(4), 609–24. doi:10.1007/s11019-014-9562-0.
- Thomas, K. (1983). *Man and the natural world: Changing attitudes in England 1500–1800*. Penguin UK.
- Trede, F. & McEwan, C. (eds) (2016). *Educating the deliberate practitioner*. Amsterdam: Springer.
- Wikström-Grotell, C. & Eriksson, K. (2012). Movement as a basic concept in physiotherapy--a human science approach. *Physiotherapy Theory and Practice*, 28(6), 428–38. doi:10.3109/09593985.2012.692582.