

Researcher Background Narratives

O'Connor, J. Background Narrative

My interest in systems approaches to understanding human movement emerged during the enactment of a rather linear, reductionist, hierarchical and developmental framework culminating in my PhD studies exploring fundamental motor skill development. In the mid 1990's in my final undergraduate year as part of a research project, I had theorized (without any real background reading or rigor) that if you could find out movement patterns that were common to most sports and activities, and teach these patterns to young children, then we could effectively be 'teaching' the foundation skills for hundreds of sports and movement activities with relative efficiency. My logic was that young people who learnt these fundamental skills would be on a path to lifelong participation. Transfer of learning would do the rest. I scoured the library (no e-books back then) for every sporting/coaching book I could get my hands on, reduced the most common sport skills to fundamental elements and pulled out their common teaching points. I effectively developed my own interpretation of 'the fundamental motor skills'. I did this completely oblivious to the extensive body of work within the motor development and physical education literature that was emerging at the time all around me.

An honours year followed and a PhD that somewhat frustratingly tried to test this linear logic in practice. A triangular model of hierarchical motor skill development made intuitive sense, and in pure transfer of learning terms probably had some merit. But the enactment of it demonstrated that reductionist linear approaches were actually quite problematic in the real world. My research raised more questions than answers. In the meantime, an emerging body of work was starting to challenge linear and hierarchical models of motor learning. It was here that dynamic systems thinking and ecology emerged on my horizon as providing a more complete picture. In a nutshell, I learnt that context matters. A person's social ecology, not their capacity to sequentially apply force provided a more feasible, yet more complex way to explain movement and learning to move. It was through the application of systems thinking I realised that individual movement was not simply the product of the component parts of motor skill development. It was over several years of grappling with this concept that I began to see learning and the world quite differently from my reductionist scientific roots. I crossed borders of systems thinking between motor learning and control struggling to read authors like Bernstein (Nikolai, not Basil), Gibson, Turvey, Kelso, Davids and Handford. I adopted a focus on ecological approaches found in population health (Sallis, Stokols, Glass) and environmental science (Wattchow, Jardine) with a focus on social-ecology and only very recently salutogenesis (Antonovsky, Quennerstedt, McCaig). I couldn't escape systems thinking as a foundation for understanding learning. A new set of tools emerged that enabled me to interrogate movement. Terms like 'affordance' 'degrees of freedom' and 'non-linear dynamics' began

to create a lens through which I could better understand the complex and emergent movement patterns of an infant learning to crawl, through to how a population moves within an urban landscape.

My particular systems perspective for physical education has largely centred on the concept of ecology and in particular social ecology (as I was dealing with people). Applying socio-ecological frames for me and my colleagues meant that we became compelled to think of individual behavior as being shaped by individual things including genetics, bodily constraints, physical/motor abilities, perceptions, sense of coherence, attitudes, beliefs and motivations. We were also compelled to consider the individual as part of a nested system and consequently influenced by social communities (siblings, parents, peers, coaches, teachers, etc.) and their cultural practices or norms, constructed over time and that constantly act to shape, reinforce or inhibit behavior. Importantly, the role of the individual's environment (built or natural), the policies and features that afford movement also exerted a significant influence on behavior. Concepts of lived experience, place and agency across time helped me to explain ecologies of movement (O'Connor, Jeanes, Alfrey, & Wattchow, 2014).

Whilst obvious to me now, I had started out with an overly simplistic solution for participation. In a complex world with complex interactions, young people need more than a motoric capacity to receive or propel an object (including themselves) in order to competently and confidently move throughout their lives. Embracing complex dynamic and ecologically sound concepts for understanding physical education strikes me as being important if we are going to firstly understand and secondly impact young people's physically active lives. Yet as transdisciplinary as these forms of thinking were, they still operated in silos with their own unique language and influences. I now feel ready to begin to elaborate on this framework through consultation with others and to begin to synthesise these thoughts for the field to ponder.

Jess, M. Background Narrative

I think I have always had a leaning towards systems thinking but it is only in the last decade that I have got a grasp of how this may work to help me make better sense of things. For years I didn't have the background, the confidence or the context to help me get my head round the idea that systems thinking offers more than the idea of a closed system like watches or traffic lights. During my first 30 years in physical education I felt that I was locked into a closed system with a narrow focus on short blocks of specific sports or team games dominating virtually every context in which I worked. As a teacher, I regularly tried to instigate discussion about this reproductive 'blocked' curriculum but few of my colleagues were interested and I didn't know how to make any inroads. While my first decade working in higher education offered me the opportunity to explore a more generic and open-ended movement approach for young children, my initial PhD study soon locked me back into a world of causality, linearity, statistical significance and 'proving that'.

Then, as this generic movement approach we were developing in Edinburgh started to receive attention in policy circles, it began to attract the attention of teachers and schools. As my research life was being driven by a reductive and positivist view of the world, my work with teachers was presenting me with something very different: Experiences that were messy, non-linear and far from predictable. Even in a small country like Scotland, most of the teachers I worked with had different backgrounds, different expectations and generally worked in different contexts. Some of the teachers understood the ideas from the movement courses we ran in one way while others viewed it all very differently. In their schools, some received positive responses from colleagues while others got little or no support. What happened in each school not only depended on the individual teachers but also the contexts in which they were working.

By 2006 I was at a crossroads. As my first attempt at a PhD came to an ignominious halt, I fortunately fell into a second PhD attempt informed by a new set of ideas. Ecological theory, dynamical systems, social constructivism, situated learning and complexity thinking opened a new door: a door to sense making. From an ecological and situated perspective, I began to understand that children's movement development could be explained by the many interactions that took place between the children, as individuals, the tasks they were attempting and the different environments in which the tasks were being attempted. This was the first big step in making sense of the complex and emergent nature of physical education. From there I would like to say there was an 'ah ha' or 'light bulb' moment to move things forward but, to be honest, it was a bit of a grind as my colleagues in the Developmental Physical Education Group in Edinburgh worked with me to try and make sense of complexity thinking. Self-organisation, emergence, connectedness, recursive elaboration and other principles were gradually integrated with ecological ideas to inform our thinking about curriculum, professional learning and advocacy. Initially, the complexity principles were used as an academic lens to inform our thinking but as we shared and grappled the complexity and ecological ideas became the key drivers of our applied work. It still may be hard to explain these systems thinking ideas to everyone but they certainly have helped me make much more sense of what I think and do.

Table 1: Author background narrative summary

O'Connor background narrative	Jess background narrative
<p>Commenced with a rather linear, reductionist, hierarchical and developmental framework during my PhD studies exploring fundamental motor skill development.</p> <p>An initial belief that by teaching fundamental movement skills common to most sports and activities to young people it would result in an efficient transfer to participation in sports and games.</p> <p>Hierarchical and linear development offered a feasible and common-sense logic.</p> <p>The enactment of this somewhat linear and reductionist approach was more complex than initially thought.</p> <p>Emerging approaches in learning and control, population health and environmental science began to create a broader set of lenses through which I could better understand the complex and emergent nature of movement. From an infant learning to crawl, through to how a population moves within an urban landscape.</p> <p>Socio-ecological frames compelled a re-think to better consider how individual behavior is continually and dynamically shaped by organismic constraints, socio-cultural influences and environmental features (built, natural or policy).</p> <p>In a complex world with many complex and layered interactions over time, I discovered that young people need more than a motoric capacity to competently and confidently move throughout their lives.</p> <p>Progressed from a focus on sub-components of popular sports and games being almost ignorant of the individual, to a more authentic consideration of the individual within a context (place) both shaping and being shaped through complex, layered and non-linear interactions.</p>	<p>Closed view for first 30 years as a teacher where physical education was viewed as a closed system of inputs and outputs with predictable outcomes.</p> <p>Lacked background, models, context and confidence to think beyond closed systems.</p> <p>Focused on short blocks of narrowly contextualised sports or team games.</p> <p>Difficulty challenging this dominant context, resistant to change.</p> <p>In higher education, after a period of causality, linearity, statistical significance and 'proving that,' began to see a contradiction between this reductive and positivist world view and the work that was unfolding with schools and teachers.</p> <p>Working with teachers in schools presented messy, non-linear and far from predictable outcomes given the array of different backgrounds, different expectations, different contexts and different interpretations. What happened in each school not only depended on the individual teachers but also the contexts in which they were working</p> <p>Ecological theory, dynamical systems, social constructivism, situated learning and complexity thinking opened a new door, a door to sense making.</p> <p>An understanding merged that children's movement could be explained by the many interactions that took place between the individual, the tasks they were attempting and the different environments in which the tasks were being attempted.</p> <p>A complex and emergent picture of physical education began to make sense where self-organisation, emergence, connectedness, recursive elaboration and other principles were gradually integrated to inform thinking and eventually drive our work in curriculum, professional learning and advocacy.</p>