

<cn>7

<ct>Occupational science

<sbt>The study of occupation

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<cout>chapter outline

This chapter explores how occupational science is informing occupational therapy practice.

Firstly the discussion looks at occupational science as a basic science underpinning occupational therapy knowledge, before recent developments in occupational science are show-cased as a way of illustrating its growth as an applied science. Along the way, real world international examples are offered. Each highlights how the ‘science’ of occupational science is guiding evidence-based occupational therapy practice. Each example, in its own way, illustrates occupational science ‘in play’ within the everyday practice worlds of occupational therapists.

<cout>Expanded outline

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<objh1>Objectives

After reading this chapter, you will be able to:

<objbl>apply an occupational science evidence-based practice way of thinking about day-to-day practice;

<objbl>interpret the difference between basic and applied occupational science knowledge underpinning practice;

<objbl>begin to synthesize occupational science knowledge from diverse studies in order to consider how occupational therapy practice might serve individuals, communities and society well; and

<objbl>evaluate how well your own practice is guided by the existing and emergent basic and applied occupational science knowledge.

<h1>Introduction

Logan* was 15 when he found out he was going to become a father. “It was really scary. I didn’t know what everyone would think or how I would tell my parents,” remembers Logan. “It would have been nice to have someone to talk to before my baby was born.”....Now 18 years old, Logan is a dedicated full-time dad while his partner pursues her goal of becoming a midwife. [At the community youth centre] he’s found a place to hang out and says it has given him the confidence to be a better father. “We talk about all sorts – child development, being a good parent, mentoring, just trying to be a better man.”....The dad’s program has also motivated him to build his music skills and consider youth or social work (Ministry of Social Development, 2011, p. 8).

*Pseudonym

(Insert photo 7.1 about here)

<photo7.1>Photograph 7.1

<dphoto7.1>New father with his daughter. Photo taken by Valerie Wright-St Clair

Logan’s story reflects what this chapter is about. It reveals how life changes can mean people, or sometimes communities, need support to learn and successfully engage in new

occupations. And, it points toward understanding how an in-depth knowledge about humans as occupational beings can inform new ways for occupational therapy to contribute to healthy families and communities. But first, let's go back to the ideas behind this chapter.

Occupational science is a term that many occupational therapists will already recognise.

What occupational science is and how it informs occupational therapy practice may be less understood than some of the other sciences occupational therapists have studied such as the anatomical sciences, like musculoskeletal biology and neuroanatomy; and the social sciences, like sociology and psychology. As a distinctive field of study, occupational science has its roots as a basic science aimed at building knowledge about the substrates, form, function and meaning of what people do (Zemke & Clark, 1996), and the occupational nature of being human (Wilcock, 2006). Studying occupation involves building knowledge about its “observable and phenomenological aspects” (Clark & Lawlor, 2009, p. 7). In order to explain the complex ideas behind studying the ‘observable’ and ‘phenomenological’ aspects of occupation, an illustrative tale is offered; Antoine de Saint-Exupery’s (1972) classic story of *The Little Prince*. It opens with the narrator’s voice as he reflects back on his boyhood. When only six years old, entranced by a picture of a boa constrictor ingesting its prey whole, he produced his first drawing of a boa constrictor having swallowed an elephant. He showed his drawing to the grown-ups and asked if it frightened them. Observing what appeared to be the outline of a hat, the grown-ups said they were not at all frightened. Somewhat puzzled by their response, the boy produced his second drawing. This one left nothing to the imagination; it was a prosection showing the elephant inside the boa constrictor. At this point the grown-ups advised the boy to give up drawing boa constrictors “whether from the inside or the outside” (de Saint-Exupery, p. 8) and concern himself with factual matters in the world. So now he speaks of sensible things such as “bridge, and golf, and politics, and

neckties” rather than of fanciful things such as “boa constrictors, or primeval forests, or stars” (de Saint-Exupery, p. 9).

In such a simple way, this tale captures the two fundamentally different ways we can study occupation as a basic science. One way is to study its observable aspects. This way of coming to know things is underpinned by the assumption that, like the boy’s second drawing of the elephant inside the boa constrictor, the truth about occupations and the occupational nature of humans exist in the world. Therefore, we can come to know it by gathering data gained through our senses (de Poy & Guitlin, 2011). From this view, truth or reality can be seen, touched, heard or measured in some objective way. On the other hand, if we accept there is not one but many truths, or multiple realities about occupations and the occupational nature of humans, this opens the way for studying the phenomenological aspects of occupation. This way of coming to know about occupation is underpinned by the assumption that, like the boy’s first drawing, people experience their own subjective, contextual reality.

<h1>Building a basic knowledge of occupation

Attempting to give an overview of the knowledge occupational scientists are building is a little like swallowing an elephant; there is no agreed way to go about it and, just as an elephant creates a big bulge in a boa constrictor, the breadth of the field and the diverse methodologies employed make it hard to convey its scope within a few paragraphs.

Separating observable from phenomenological perspectives gives some structure, and we have also chosen to focus on the recent literature, to give a sense of the whole of the science and its likely future directions.

<h2>Observable aspects of occupation

Comparatively little occupational science research has addressed the substrates of occupation, where ‘substrates’ are the human capacities required to engage in activities that have form, function and meaning. That is perhaps because many of occupation’s substrates are not

directly observable, requiring neuroimaging and other technologies to 'see' them. One exception in the recent literature is Liew and Aziz-Zadeh's (2011) review of the neuroscientific evidence of linkages between language and action, and the implications that has for understanding interpersonal relationships and the ways language both creates and mediates the meaning of occupation. Another way to 'observe' occupation is to synthesise the cross-disciplinary knowledge. For example Stein, Foran and Cermak (2011) reviewed literature from psychology, neuroscience, nursing and other disciplines to investigate one aspect of occupational forms - the patterns apparent in people's occupations. That study revealed that the configuration of daily occupations of parents caring for children with autism impacts the parents' relationships with others, feelings of competence, identity, and the time and energy they invest in meeting personal goals and maintaining their own health.

New understandings of the function of occupation are also observable when an occupational perspective is brought to bear on the cross-disciplinary literature. For example Smith-Gabai and Ludwig (in press) found that because complying with the Jewish Sabbath requires disengagement from everyday tasks and worries, it functions as an 'oasis' of rest and renewal. Aspects of occupation, including its meaning, can also be observed using quantitative measures. Håkansson and Ahlborg (2010), for instance, surveyed over 2,500 Swedish employees about their everyday lives, and repeated the measures 2 years later. The researchers established that while both men and women reported experiencing their occupations as meaningful, doing things experienced as meaningful was a good predictor of subjective health for women but not for men.

<h2>Phenomenological aspects of occupation

Phenomenally, we can study and come to understand occupation through ideas (de Poy & Guitlin, 2011) which occupational scientists have typically accessed by asking individuals about their lived experience of things. One aspect of experience that has seldom been the

focus of inquiry, however, is the bodily experience of engaging in occupation, even though phenomenology encompasses such understandings and are relevant to developing a science of occupation (Lala & Kinsella, 2011). Nonetheless, insights can be gleaned from studies of participants with physically disabling health conditions and physically challenging occupations. For instance, an older woman who had experienced a stroke is described as “separated from the sense of bodily safety” (Odawara, 2010, p. 16) and an account of skateboarding includes a description of the skilful execution of a trick; “you have to know where your feet are planted... to crouch; it’s about weight distribution. You can’t have too much weight on top” (Haines, Smith, & Baxter, 2010, p. 242).

The function of occupation has also been uncovered by studies that asked people about their experiences. For instance, Canadian women of African descent were found to mediate everyday experiences of racism through prayer, reading the bible, private devotional activities, singing spiritual songs, and other spiritual and church-related occupations (Beagan & Etowa, 2011). Finally, the meanings occupations hold for particular people in specific contexts are a major theme in the occupational science literature, generated through studies using a wide range of methodologies. One recently published example reports the identity meanings of occupation for ‘Sam’, a former US marine living with a spinal cord injury. That study used ethnographic and narrative approaches to uncover Sam’s lived experience and, more unusually in occupational science, interpreted his account in relation to broader social discourses (Asaba & Jackson, 2011).

Although we addressed them separately, what is important is not the study of occupation’s observable OR phenomenological aspects, but the study of occupation’s observable AND phenomenological aspects. Both dimensions of knowledge are important to studying occupation as a basic science. One informs the other. One exists in accord with the other. It is a synergistic relationship. Beyond these aspects, moral philosophy offers an opportunity to

think broadly about living a good life, such as the question of “what counts as an occupationally satisfying life” (Morgan, 2010, p. 217) or, guided by normative ethics, ‘how ought I practice to enable people to live occupationally satisfying lives?’ Such understandings cannot be adequately addressed by observational or phenomenological approaches, but may be addressed as the boundaries of occupational science scholarship extend to include more philosophical concerns.

<h2>The occupational nature of being human

Sitting alongside all the studies of observable and phenomenological aspects of occupation, there is an ongoing thread of discussion about the occupational nature of being human and the extent to which current conceptualisations reflect a normative Western world-view (Hocking, in press). One challenge to that perspective, which holds that people’s engagement in occupation is active, purposeful, temporal and meaningful, drew inspiration from a study of the occupations of inhabitants in a Greek village (Kantartzis & Molineux, 2011). In that more collectivist context, the duration and quality of people’s daily occupations are shaped by the belief that periods of hard work should be balanced by adequate rest and relaxation, by free time being less structured and ‘hanging out’ being expected and accepted, and by the needs of the group they are part of and their subjective state. Over time, as occupational scientists encompass understandings that come from diverse socio-economic, cultural and historical perspectives, the field will develop knowledge of the occupational nature of humans that better represents the implicit relationship between occupation and well-being.

<h1>Occupational science as an applied science

Thus far, we have considered occupational science as a basic science, yet it is more than that; it is emergent as an applied science. Applied sciences like biomechanics, ergonomics and mental health rehabilitation are already familiar to occupational therapists. As a consequence, therapists will be accustomed to using such applied sciences to guide their day to day

decisions in practice. Applied sciences provide a knowledge base informing what to do and how to go about practice for a given occupational disruption. While occupational science may be a new feature within the expansive field of applied sciences, over two decades on from its inception, occupational science's latent potential exists in its capacity to be a "comprehensive translational science" (Clark & Lawlor, 2009, p. 7). Occupational science, as an applied science, is already in the business of transforming rigorous basic science findings into evidence based occupational therapy. In this way, "occupational science is designed to systematize knowledge about occupation, especially in relation to health and well-being" (Clark & Lawlor, 2009, p. 4). Interpreting this idea further, systematized occupational science knowledge is beginning to guide occupational therapy practice at all levels from individual health to population health approaches. So let's look more closely at what is meant by the systematizing of knowledge.

<h2>Systematizing occupational science knowledge

The origins, or etymology, of the word helps us to make sense of what it means to 'systematize' occupational science knowledge. 'Systema' in Greek was derived from the root words meaning "together" and to "cause to stand;" in other words systema referred to something that stands as one in an "organized whole" (Harper, 2010). So a process which systematizes occupational science knowledge for occupational therapy is a methodical, rigorous way of developing a disciplined, coherent set of 'rules' or methods for application in practice. Systematizing is about identifying, developing, analysing, and optimizing knowledge for use. It is a translational process; transforming scientific understandings to practice knowledge.

Systematizing occupational science knowledge fits with the international call for health practitioners, including occupational therapists, to use 'best' evidence to guide everyday practice. A methodical way of doing translational occupational science research was put

forward by colleagues at the Division of Occupational Science & Occupational Therapy, University of Southern California (USC), in the United States. It is designed as a rigorous way of developing occupational therapy practice knowledge from issues about which little is known, but may have an occupational foundation. Figure 7.1 summarizes the process which begins with identifying and articulating the practice issue, then gathering a first layer of descriptive ‘evidence’ from which an intervention is derived. The next layers of evidence come from testing how likely the intervention is to bring about the desired outcome, and still further, by measuring the cost effectiveness of the intervention if it is successful. These methodical steps might seem enough in themselves but, for this practice knowledge to ‘stand together’ as an organised whole, understanding why the intervention worked is essential. A coherent body of causal evidence then opens the way to build an explanatory theory; bringing together the research observations with interpretive reasoning to explain outcomes of intervention and add to the body of occupation-based knowledge.

(insert figure 7.1 here)

<fig7.1>Figure 7.1

<dfg7.1>Blueprint for a translational science research program (permission to reprint requested from LWW. Clark & Lawlor, 2009, p. 11).

Such a rigorous process shows the symbiotic relationship between the practice and research communities (Clark, 2006). That is, in the occupational therapy domain, the questions for occupational science research arise from practice-based issues, and the research findings, in return, provide knowledge for practice. Practice and research only exist and thrive together. However, implementing the blueprint for generating new knowledge is not for the faint-hearted; it takes years to undertake the multiple studies, and demands significant funding and researcher commitment. The following examples illustrate how occupational science research can underpin and come to life in the context occupational therapy practice.

Occupational science informing occupational therapy

Occupational science informing occupational therapy is an idea whose time has come (Blanche & Henny-Kohler, 2000; Clark, Jackson, & Carlson, 2004; Molineux, 2004; Pierce, 2011). The following 3 case studies show how scientific understandings about human occupation are informing practice across the international occupational therapy community. Clark and Lawlor's (2009) blueprint for a systematic program of translational science research (figure 7.1) is used explicitly as a way of lighting up the steps involved.

Case Study 7.1

Occupations and pressure ulcer risk: The USC/Rancho Los Amigos National Rehabilitation Center Pressure Ulcer Prevention Research Program

Step 1: Identify the practice problem

In the United States, pressure ulcers are recognised as a common, complex and costly problem for people with spinal cord injury (SCI). Risk assessment using the existing measurement tools was imprecise. Of particular interest to occupational scientists and therapists was the concern that pressure ulcer occurrence could have an occupational foundation and be a recurrent barrier to adults participating fully in their everyday occupations (Clark et al., 2006).

(Insert photo 7.2 about here)

Photograph 7.2

Photograph 7.2 Kerri Morgan, USA, racing in the International Paralympic Committee (IPC) World Athletics Championships in Christchurch, New Zealand. Photo taken by Karen Boyle. (Reproduced with permission).

Step 2: Identify the intervention needs

Occupational scientists at USC and their research collaborators designed a holistic ethnographic, qualitative study, now called the Pressure Ulcer Prevention Study I or PUPS I

(NIDRR #H133G000662), to explore the everyday life contexts that contribute to the occurrence of pressure ulcers for men and women, from different social backgrounds, following spinal cord injury (Clark, Sanders, Carlson, Blanche, & Jackson, 2007). Through a prolonged, in-depth process of interviewing the study participants, and observing them as they went about their usual days, the researchers sought to understand how the complex, dynamic mix of daily circumstances played out as risks for pressure ulcers for each person (Clark et al., 2006). For example, Robert's story is highly illustrative of the interplay between his individualized risk profile, of tending to overlook his preventative strategies in preference for participating in active occupations, and the sudden occurrence of a pressure ulcer risk event. "When he was discharged from the rehabilitation facility to a skilled nursing service...he started to spend a large amount of time riding around in his wheelchair with 2 other young men who lived at the facility" (Clark et al., 2006, p. 1519). Robert developed two pressure ulcers as a consequence. Just as the researchers came to understand Robert within his occupational world, an individualized and richly contextualised occupation and risk profile emerged for all the study participants. By interpreting across all of the stories as a whole, the researchers developed a coherent series of pressure ulcer development models including the dynamic balance of liability and buffering factors, individualized risk profiles, a generalized pressure ulcer event sequence (figure 7.2), and a long-term pressure ulcer event sequence. While theoretical in nature, the models are grounded in the richness of the qualitative, occupational science data.

(Insert figure 7.2 about here)

<fig7.2>Figure 7.2

<dfig7.2> Overview of generalized pressure ulcer event sequence. (Reprinted from *Archives of Physical Medicine and Rehabilitation*, 87(11), Clark et al., Data-based models of how

pressure ulcers develop in daily-living contexts of adults with spinal cord injury, p. 1521, Copyright (2006), with permission from Elsevier).

Amongst other results, the occupational scientists found that pressure ulcers most commonly occurred, and recurred, for those whose historical risk profile was moderately high, in the context of a disruptive health or life event. What the findings highlight is the need for preventative interventions to take account of “the unique constellation of circumstances that comprise a person’s everyday life” (Clark et al., 2006, p. 1516). The knowledge gained through this highly iterative process was ready to be further systematized and tested out in an applied study.

Step 3: Develop the intervention

Armed with the holistic ethnographic study findings, the occupational scientists understood how pressure ulcer development was a potentially modifiable risk in the occupational lives of people following spinal cord injury. Their next step was to thoughtfully apply the basic knowledge to designing a model for occupational therapy intervention to be conducted and tested through an “occupational-science based clinical trial” (Clark et al., 2004, p. 201). Developing and testing the efficacy of the intervention meant a process of carefully manualizing, or documenting the therapeutic methods to be rigorously applied and determining the outcomes to be measured. It was time to put the intervention model to the test.

Step 4: Test the intervention

In conducting the occupational-science based clinical trial referred to as PUPS II (NIH #R01 HD056267), the researchers were required to carefully assess whether their manualized intervention, the Lifestyle Redesign® Pressure Ulcer Prevention Program (LR-PUPP) was more effective than standard care in preventing pressure ulcers. In this large scale, randomized controlled trial (RCT), 160 participants have been randomized into either an

occupation-based LR-PUPP group or a standard care group. At the conclusion of the 12-month intervention phase and one year later, the incidence of and costs related to the care of pressure ulcers will be compared between the two groups to determine whether statistically significant benefits can be detected for the intervention group.

In addition, as one component of the process of developing the manualized, occupation-based intervention, these occupational scientists generated a comprehensive set of resources that can be employed by occupational therapists (USC/Rancho Lifestyle Redesign® Pressure Ulcer Prevention Project, 2006a), other rehabilitation practitioners (USC/Rancho Lifestyle Redesign® Pressure Ulcer Prevention Project, 2006c), and consumers and their families (USC/Rancho Lifestyle Redesign® Pressure Ulcer Prevention Project, 2006b) to inform programs and best practices related to pressure ulcer prevention. More recently, they have also published a framework that emerged from their data to assist in the development of a comprehensive risk assessment tool (Seip, Carlson, Jackson, & Clark, in press).

Systematizing occupational science knowledge for application by occupational therapists means everyone wins; the clients, their families and friends, the health care funders and providers, the greater community, and of course, the occupational therapists.

(insert photograph 7.3 about here)

Photograph 7.3

Kerri Morgan, USA, winning at the 2011 IPC Athletics World Championships in Christchurch, New Zealand. Photo taken by Karen Boyle. (Reproduced with permission).

Step 5: Evaluate the cost-effectiveness

As already specified in Step 4, the RCT underway is evaluating the cost-effectiveness of LR-PUPP. On a quarterly basis, the researchers are tracking the costs associated with pressure ulcer care in both the LR-PUPP and standard care groups. Once completed, study results will be able to reveal not only whether the intervention was efficacious, but also

whether it produced beneficial effects in a cost-effective manner. As the trial is still in progress and not all participants have completed the intervention phase, the results of the trial have not yet been analysed.

<csh2> Step 6: Study why the outcomes were produced

<cs>Finally, within the PUPS II research design, the mechanisms that account for the therapeutic outcomes of LR-PUPP can be examined. For example, as part of the study, it is hypothesized that participants in the study will increase their enactment of prevention behaviors because of increased knowledge, social support, and self-efficacy. This hypothesis will be tested as another key aspect of the study.

<csh2> Step 7: Develop the theory

<cs>The PUPS research program has already generated considerable theory development. For example, its qualitative arm produced overarching principles of pressure ulcer risk and data-based models therapists can employ to more comprehensively understand the elements that contribute to pressure ulcer risk (Clark et al., 2006; Jackson et al., 2010). However, it is expected that once the RCT is completed, additional theory will be generated on the factors that explain the therapeutic effects. Ultimately, the goal of this research program is to provide occupational therapists with a theoretically guided, scientifically grounded, and evidence-based intervention approach for lessening pressure ulcer risk in their patients with spinal cord injury.

<cst>Case Study 7.2

<csh1>Participation for children with physical disabilities: The *CanChild* Centre for Childhood Disability Research program

(insert photograph 7.4 about here)

<photo7.4>Photograph 7.4

<dphoto7.4> [Leisure-time reading. Young children at play](#). Taken by [Valerie Wright-St Clair](#) and [Andrea Casey](#) (Reproduced with permission).

<cs>In a recent position statement to the Canadian Government Standing Senate Committee on Human Rights, Mary Law (2011) made the case for the exclusion from everyday and school occupations being a human rights issue for young people with physical disability. But the capacity to influence good public policy did not start there. It began over a decade ago when the *CanChild* team embarked on a research journey of generating and translating occupational science knowledge for use in occupational therapy practice. As is the case for applied research in occupational therapy, it started with understanding the problem.

<csh2>Step 1: Identify the practice problem

<cs>Like many other places, young people with disabilities in Canada make up approximately 5% of the country's population (Law, 2011). Of particular concern to the *CanChild* team was knowledge indicating that these children are often excluded from engaging in age-appropriate occupations, especially leisure and sporting activities (Law, 2011). For example, research with the newly developed Participation and Environment Measure (PEM-CY) (Coster et al., in press) indicated that "24% of children and youth with disabilities never take part in unstructured physical activities in the community in comparison to only 2% among their typically developing peers" (Law, 2011, p. 3). As well, in spite of there being quite extensive research on children's play as an occupation, new ideas were emerging about play as a quality of occupational engagement, rather than a type of activity (Pollock et al., 1997). Further exploration was warranted.

<csh2>Step 2: Identify the intervention needs

<cs>Beginning with a qualitative interview-based study, 10 adolescents with congenital disabilities, and 10 age and gender-matched peers, were asked about their play experiences.

Both groups said play occupations needed to be self-chosen, and be 'playful' or fun in nature.

But those with disabilities mentioned more barriers to participation, such as needing to develop the motor skills for engaging, being limited by the physical environment, and feeling different to peers or not belonging (Pollock et al., 1997). Where these qualitative findings hinted at some of the occupational needs faced by young people with disabilities, the *CanChild* longitudinal, Participate Study (Law, 2011) provided stronger descriptive evidence. With the aim of determining the factors that enhance participation in childhood occupations for those with physical disabilities, Law and her team observed 427 six to 16-year-olds over time. While activity preferences and supportive family relationships were significant contributors, the contextual environment was “one of the most important factors influencing participation of children and youth with disabilities” (Law, 2011, p. 4). The strength of these findings suggested that one approach to improving participation could be by modifying the contextual factors.

< csh2> Step 3: Develop the intervention

<cs>The *CanChild* team partnered with colleagues at the University of Alberta to design a randomized controlled trial to compare the efficacy of two different therapy approaches aimed at promoting children’s participation in everyday occupations (Law et al., 2007). One group of children would receive ‘context-focused’ therapy aimed at modifying the occupations and environment found to hinder goal-directed participation. The other group would get ‘child-focused’ therapy aimed at identifying and remediating impairments, such as muscle tone, to improve movement patterns and improving a child's skills. By repeating chosen outcome measures over time, the researchers would be able to evaluate the functional gains made between the two intervention groups.

< csh2> Step 4: Test the intervention

<cs>For the study, 128 children with cerebral palsy received either the ‘context-focused’ or ‘child-focused’ weekly intervention for a period of six months (Law et al., 2011).

Standardised measurements of the children's level of disability, gross motor function, range of motion, and participation in everyday occupations beyond school activities, as well as family empowerment were conducted at the beginning and end of the intervention period, and then repeated 3 months later. Interestingly, children in both groups made similar significant gains in their functional and participation outcomes. This important finding means therapy focusing on changing the occupation and the environment is just as effective as therapy aimed at changing the child's impairments and improving abilities through practice of functional activities.

< csh2> Step 5: Evaluate the cost-effectiveness

<cs>Future research can determine the cost-effectiveness of interventions focused on changing the occupation and environment. Observations made during the trial suggest that environmental changes can lead to improved participation very quickly but this observation needs to be tested.

< csh2> Step 6: Study why the outcomes were produced

<cs>Both the child-focused and context-focused interventions identified goals for therapy intervention. With the child focused approach, specific problems with performance were identified for intervention. In the context focused approach, the Canadian Occupational Performance Measure (COPM) (Law et al., 2005) was used to identify individualized child goals. Goal setting has been shown to improve the effectiveness of therapy (Lowling, Bexelius, & Carlberg, 2009; Østensjø, Øien, & BjØrg, 2008). Through changing the occupation and/or environment, barriers to participation are eliminated to enable the child to perform the occupation using their current skills and abilities.

< csh2> Develop the theory

<cs>Thanks to Law's *CanChild* research program focused on children's occupations, therapists have several, evidence-based, participation focused assessment tools to use in

practice; the Assessment of Preschool Children's Participation (APCP), the Children's Assessment of Participation and Enjoyment (CAPE) and the Preferences for Activities of Children (PAC) (*CanChild* Centre for Childhood Disability Research, 2011). Therapists can have confidence in shifting their focus from impairments to occupations and the environment in order to promote participation of children with physical disabilities. At the population level, therapists have grounds for promoting public policies that promote "child and youth participation in community settings" (Law, 2011, p. 5). And, by making the research findings and resources available on their website <http://www.canchild.ca/en/> the *CanChild* Centre for Childhood Disability Research ultimately benefits the community as a whole.

<cst>Case study 7.3

<csh1>Everyday occupations and aging well: The Life and Living in Advanced Age

(LiLAC) Cohort study: Te Puāwaitanga o Ngā Tapuwae Kia Ora Tonu [Māori translation]

<cs>At the School of Population Health, University of Auckland, in New Zealand, a multidisciplinary team, led by geriatrician Dr Ngaire Kerse, is conducting a prospective cohort study to establish the determinants of aging well for older New Zealanders. In particular, the study aims to understand the relative importance of medical, cultural, functional, activity (occupational), social and economic factors to relevant health and longevity outcomes. Following a preliminary feasibility study to test an extensive, interview-based questionnaire with 112 participants, 941 older adults were enrolled during 2010 from selected urban and rural regions; 532 non-Māori turning 85, and 409 Māori aged 80 to 90 (extended age criterion to get adequate numbers). At the end of 2011, the first wave of data gathering was complete, the second wave was ready to begin, and a third wave was planned. So, let's look more closely at the occupational science research strand.

<csh2>Step 1: Identify the practice problem

<cs>As in most other countries, New Zealand's population is aging. By the late 2030s one-quarter of the population will be older than 65, compared to 12 percent in 2005 (Dunstan & Thomson, 2006). Of this population sector, those aged 85 and older make up the fastest growing sub-group with a predicted 600% increase in the first half of this century. This means many more people will be living into their late eighties and beyond. Accordingly, understanding what helps people age well and live well in advanced age is important. The consensus so far is that engaging in occupations of some sort is positively associated with aging well and longevity (Glass, Mendes de Leon, Marottoli, & Berkman, 1999; Katz, 2000; Menec, 2003). However, findings as to what kind of occupations lead to greater health and wellbeing are mixed and at times, inconclusive. Furthermore, little is known about how older New Zealanders prefer to use their time. Occupational therapists designing community and individual-level interventions for older adults have little culturally-specific knowledge to draw on.

(Insert photograph 7.5 about here)

<dphoto7.5>Photograph 7.5

<dphoto7.5>Garth Barfoot & Steve Kingdon preparing for a club cycle race to the top of the Waitakere Ranges, Auckland, New Zealand, June 2011. Photograph taken by Valerie Wright-St Clair (Reproduced with permission).

< csh2>Step 2: Identify the intervention needs

<cs>Two basic research projects are informing this step of the research program. Initially, a qualitative, hermeneutic phenomenological study was conducted in 2006 to explore how older New Zealanders experience being in their everyday lives. Community-dwelling elder Māori and non-Māori of European descent, aged 71 to 97 years, were interviewed about their everyday with a focus on particular events (Wright-St Clair, Kerse, & Smythe, 2011). Several phenomena stood out in the findings. In advanced age, “doing the things ordinarily attended

to, in accustomed ways, holds things steady” (Wright-St Clair et al., 2011, p. 93) and keeps things going in the context of getting older. Paradoxically, this accustomed comfortableness in doing things, when it was suddenly lost, revealed potential transition points in life. Such sudden discomforts amid doing usually deeply familiar occupations announced change. To illustrate, 97-year-old Ferguson, who lived alone with help from his daughter, only came to know his rapidly fading strength when putting his dressing gown on a few days earlier. It was a task usually so easy, so familiar, he ordinarily did not notice doing it. He said he “had a hell of a time. And when I did get it on it was too heavy and yet I have worn it all my life” (Wright-St Clair et al., 2011, p. 92). A few weeks later, Ferguson was admitted to an aged care facility. In addition, the findings suggested that compelling occupations, the things that brought a deep purposefulness to being in the everyday, were not only wellness-promoting but essentially different for Māori and non-Māori. Elder Māori spoke more of doing things with and for the collective Māori community. These phenomenological findings justified the case for including an open question about the person’s 3 most important activities and what occupations the person has engaged in over the last 4 weeks within the preliminary feasibility study and wave I, and an additional question about changes to occupations in wave II of the data gathering. Adapted from a study by Haggblom-Kronlof, Hultberg, Eriksson and Sonn (2007), participants will be asked whether they have dropped any interests over the last 12 months and, if so, the reasons why.

<cs>While analysis to understand the relative importance of occupations to health and longevity outcomes within the cohort study is yet to begin, descriptive analysis of the feasibility study results offer the promise of what is to come. From the preliminary phase, the occupations nominated as important were coded using the ‘activities and participation’ items in the International Classification of Functioning, Disability and Health (ICF) (World Health Organization, 2001). Interestingly, ‘domestic life’ occupations showed as being similarly

important for Māori, non-Māori, men and women (26%, 24%, 21% & 27% respectively). Most commonly, *gardening, cooking, keeping a tidy house and shopping* were mentioned as important (Wright-St Clair et al., in review). While the men were more likely than the women to nominate interpersonal relationships as being important to them, such as *doing things together with my wife*, the overall occupational patterns were similar for men and women. Differences also showed. Occupations related to ‘community, social and civic life’ (World Health Organization, 2001) were frequently nominated by elder Māori, including things such as *supporting family, attending [tribal] functions, family gatherings, or taking care of mokopuna [grandchildren]*. In contrast, a significant number of non-Māori responses revealed ‘recreation and leisure’ (World Health Organization, 2001) activities like *reading newspapers, books or magazines, playing cards or doing puzzles*, and doing handicrafts like *woodwork, knitting or drawing* as being most important (Wright-St Clair et al., in review).

<cs>A glimpse at the wave I results suggests the elders spend more time doing the things that are important to them. For example, in the last 4 weeks, spending time on a hobby or handcraft every day was something 34% of the elder Māori said they did, compared with 80% of non- Māori; whereas twice as many elder Māori than non- Māori said they visited, or were visited by, family or friends daily. At an interpretive level, the differences may point to spiritual and cultural differences, related to the traditional collective nature of the Māori and the more individualistic focus of non-Māori society.

< csh2>Develop the intervention

<cs>As this is a longitudinal study, it will be several years before intervention needs for community-dwelling older adults as well as those living in aged care can be fully identified. What is exciting about the occupational thread in New Zealand’s largest cohort study of aging well is the potential to explore the predictive qualities of everyday occupations for health, quality of life, and survival outcomes. Several possible applied research projects are

envisioned such as designing and testing: an occupation-based screening tool to identify community-based older adults who are at risk of an acute hospital or aged care facility admission; whether enabling participation in valued occupations promotes aging well for older New Zealanders; and whether an occupational therapy program which enhances participation in occupations that are self-chosen as being important, promotes living well for those in aged care facilities. Such questions will only be able to be answered in the context of a systematic program of translational science research.

<h1>Conclusion

As is already happening in numerous locations internationally, it is time for occupational science to take centre stage as a science informing occupational therapy practice, alongside other more traditional sciences such as neuroanatomy and biomechanics. You might say that knowledge about the occupations people do and their capacities and drive to do them have always informed occupational therapy. At one level this is true; at a far deeper and expansive level, the work done since the 1980s, beginning with researchers and colleagues at USC, is allowing a more profound philosophical, theoretical and research knowledge base on humans as occupational beings to take root and to flourish. There is a burgeoning amount of high quality basic science available to practitioners to make sense of in the context of their own practice. Yet it is occupational science's emergent capacity as a comprehensive applied science informing practice where the future of evidence-based occupational therapy lies.

<ackh1>Acknowledgements

Florence Clark and Mary Law for their commitment to reviewing and contributing essential detail to the case studies.

<rq1>Provocative Questions

<csnl>1. Should occupational science be universally accepted as the principle science informing occupational therapy?

<csnl>2. Can the results of basic research in occupational science be reasonably interpreted as a guide for occupational therapy practice?

<csnl>3. How familiar are you with any occupational science research that is related to your own practice domain?

<csnl>4. How is occupational science knowledge evident in your own practice?

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<box>Examination question: Multiple choice

The substrates of an occupation that can be studied are:

- a) the activity's form, function and meaning
- b) the human capacities required to engage in the activity
- c) are only the directly observable aspects of the activity
- d) all of the above

<box>Examination question: Short essay question

Read the following description and extract from Odawara (2010) and write up to 300 words on how these basic occupational research findings might be applied to your practice.

Odawara's (2010) ethnographic study, using in-depth interviews, photographs, handcrafted objects and participant observation, explored the life experience of an elder Japanese woman, Hana, following a stroke. The other 21 informants included Hana's therapist, daughter, other family members, and aged care facility staff and residents.

“In investigating the resolution of Hana's life crisis and comparing it to a rite of passage, the three stages of separation, transition and reincorporation of an occupational being into participation in society can be seen. Elements of the separation stage such as the loss of a sense of safety and security, disjunction of the past from the present and loss of continuity of a future, and the loss of the familiar embodied and social world were evident in her initial critical state. The stage of transition occurred through the guidance of an occupational therapist who recognized the need to respect Hana's self-image and occupational history, gradually building upon that respect through the introduction of graded occupational engagement in activities that were valued by Hana. The features of rituals of passage that van Gennep (1908/1960) described are all evident;

learning, collective occupations, and sponsorship. Hana's experience illustrates the use of occupation for learning skills needed for a life with disability, the psychosocial benefits of co-occupations, and the benefit of a skilled sponsor for the process of adaptation. At the same time, certain features of the occupations [the therapist] guided were evident in the resolution of Hana's life crisis. The occupations promoted temporal adaptation, bridging her past to her present and future. Other features that seem important to successful adaptation are that the occupations had personal meanings that promoted engagement, provided safety as an occupational being and promoted reincorporation into social life" (Odawara, 2010, p. 18).

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